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THE DIAGNOSIS AND TREATMENT OF LUNG ABSCESS.[1]

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THIS paper is mainly concerned with considerations of diagnosis and treatment of lung abscess, but in order to deal with these aspects it will be necessary briefly to discuss questions of ætiology and pathology.

It should be made clear at the outset that the material on which these observations are based is derived almost entirely from cases seen at Brompton Hospital, and that suppurating hydatid cyst is conspicuous by its absence. For the rest the cases are almost without exception solitary abscesses whose nature and causation do not, *per se*, preclude the possibility of effective treatment and the hope of recovery.

Some abscesses which do not come into this category will be dealt with in the differential diagnosis.

Ætiology.

Abscess of the lung may occur at any age, though it is generally considered to be commonest in middle life and to occur in males more frequently than in females in the proportion of three or four to one. Neither of these facts will be found of much assistance in the diagnosis of the individual case.

Exciting factors may next be considered. In a group of 85 cases the condition was post-operative in 35, or 41%. The operations included tonsillectomy, nasal operations, tooth extraction, and abdominal operations in most of which sepsis was present.

[1] Read at a meeting of the Victorian Branch of the British Medical Association on May 1, 1935.

Metallic foreign body was not a common cause, possibly because there are few children in the series, though this fact has often been commented on before. Certainly bronchiectasis was more commonly the result when any gross pathological change was produced. Peripheral septic foci account for some of the cases.

As a complication of pneumonia the frequency of lung abscess is variously estimated. It is uncommon in lobar pneumonia, occurring in less than 2% of cases. The abscess, when it does occur, is frequently very large.

Its frequency in bronchopneumonia is difficult to estimate, because the latter is often very loosely diagnosed. In fact the early picture of acute lung abscess closely resembles, and might perhaps rightly be called, a bronchopneumonia, but it is preferable generally not so to regard it. When the stage of cavitation is reached and the classical symptoms and signs develop, the abscess is wrongly regarded as a complication of bronchopneumonia. It is desirable, therefore, that some restraint should be used in making such a diagnosis, when the exciting factors are present, which might with equal facility lead to a lung abscess.

The onset was insidious and without obvious exciting factor in 28, or 33%, of these cases. It is important to remember this, because it is in this group of patients that the difficulty in diagnosis lies, and yet often the hopes of amelioration are highest if the correct diagnosis be made.

The average length of time between the activity of the exciting factor and the development of the symptoms which brought the patient to hospital was seven weeks. This excludes one case in which the symptoms developed after four years. It will be seen that a large number of these cases do not commence with acute symptoms. Finally, the vexed question might be considered here of the inhalation *versus* the embolic method of infection. There are cases which leave little room for doubt that the infection has occurred by the blood stream, by reason of the situation of the primary focus and the length of time which intervenes between the operation and the occurrence of symptoms of lung abscess. It is difficult otherwise to explain the occurrence of an acute lung abscess three weeks after the removal of a gangrenous appendix associated with general peritonitis. Again, the rapid occurrence of lung abscess after tonsillectomy would seem to favour the inhalation route.

It is impossible to be dogmatic. Witness the case in which an abscess occurred in the right upper lobe following a septum operation, and in which everything pointed to an embolic infection. At autopsy a piece of nasal septum was found in the abscess cavity.

It is certain that abscesses well out in the periphery of the lung fields are often embolic and that those more centrally situated are more commonly due to inhalation, but the distinction is by no means absolute.

Definition.

Many definitions are extant for lung abscess, and Maxwell,[5] in a recent survey, includes all cases of non-tuberculous cavitation with suppuration. For the purposes of this paper it is necessary to recognize that there is a precavitation stage, and the pathology is better covered by Cooper's definition:[1] "a localized suppurative process terminating in cavitation".

Pathology.

It is intended to speak here of the radiological pathology, because we are dealing with living subjects whom we are anxious to aid, and it is helpful to have a visual record of pathological states in the lung.

The development of radiology is such that the shadows which we endeavour to interpret are no longer the baseless fabric of a vision. If we study them serially, we shall find that changes take place such as our study of pathology has led us to expect, and if this is so, then the radiogram is of sufficiently great value to allow us to use it as an important factor in diagnosis and in the management of the individual case. It is so in pulmonary tuberculosis and should be so in lung abscess.

These remarks are not intended to imply that the radiogram is an infallible means of diagnosis, though it certainly is the most important single method of examination.

The points made in the subsequent paragraphs have many times been confirmed at operation, and not seldom at autopsy.

A common type of radiogram can perhaps best be described as a rather diffuse opacity containing translucent areas indicative of breaking down lung tissue. Later this may show better definition and finally become circumscribed and show a cavity with or without a fluid level when the patient is in the erect position. In general it may be said that it takes between six and eight weeks to reach this stage, though the period may be much longer. Such localization may not take place, however, and the suppurative process may spread and become a more generalized septic bronchopneumonia, perhaps with rupture into the pleural cavity and the formation of an empyema.

If this type of abscess be opened in a stage which would correspond to the diffuse appearance of the radiogram, it might not unjustly be compared with a carbuncle with many pockets, an important consideration when drainage is necessary.

It might be said that in these cases there are multiple abscesses, but most frequently they will become localized, if at all, into a single cavity.

Such are the appearances which might be associated with abscess occurring by the inhalation route. They should therefore be commoner in a central situation, though it is not uncommon to find them far out in the periphery of the lung fields.

The other type is that in which the history often suggests an embolic origin. Circumscribed when first seen, often homogeneous, and more common in the periphery of the lung field, this type may exist

for many weeks before a cavity forms, and there may be little cough and no sputum.

Finally there is the patient whose radiogram shows a chronic thick-walled cavity on the first occasion on which he presents himself.

The position of the abscess is a matter of great importance in both the medical and surgical management of the case, and therefore a true lateral film should always be taken as well as an antero-posterior film. This applies with equal force to the lipiodol picture.

The differentiation of the lobes of the lungs is not always complete, and it is, of course, generally impossible, owing to their superimposition, to say in which lobe an abscess is situated in an antero-posterior radiogram.

Symptoms.

It is not intended to discuss exhaustively the symptomatology of lung abscess. The typical case coming on shortly after tonsillectomy, with foul sputum, is known to all.

Emphasis is laid on the fact that 33% of the cases in mind commenced insidiously and without discoverable cause. This is a high figure, but Léon-Kindberg[4] rates it as high as 50%. Also it should be stressed that the average interval between the occurrence of the exciting factor and the production of symptoms was seven weeks.

Pain may or may not be present, and patients will endure a mild ache for a long period before coming to a doctor. Cough in the early stages is not very characteristic. It may be quite unproductive, though frequently the patient complains of a bad taste, and offensive breath is noticed after coughing. Later, the cough tends to be paroxysmal and postural. Dyspnœa may be severe in an acute abscess, and again it is to be borne in mind, in a patient ill after tonsillectomy, that the condition may be a lung abscess and not a bronchopneumonia. The sputum is not always fœtid in lung abscess, and, should the patient cough up the abscess contents and the symptoms then subside, it might be thought that here is a satisfactory termination of a bronchopneumonia.

Herein lies the origin of some illnesses in which the patient presents himself with a recurrence of cough and sputum, often by this time fœtid, and in whom a radiogram shows a chronic thick-walled cavity.

Hæmoptysis occurs in 70% of cases;[9] and it is well to remember that in those patients in whom it might be fairly thought that the origin of the lung abscess was embolic, hæmoptysis may be the first symptom and precede by some weeks the appearance of cough and purulent sputum. Recurrent hæmoptyses during the course of the disease are all too frequent. Rigors, sweats, high temperature may occur at one end of the scale; at the other, the constitutional symptoms and such signs as the temperature may be slight and intermittent. Frequently the variations of the signs correspond closely with the effectiveness or otherwise of the drainage.

Expectoration may be absent in the early stages. It may come with a sudden rush. "I suddenly coughed up a lot of foul stuff from my chest" usually means the rupture of an acute abscess into a bronchus, sometimes of an empyema into a bronchus, occasionally of a subphrenic abscess.

Every patient bringing up sputum should expectorate into a container holding a measured amount, say ten ounces. The amount for each twenty-four hours should be measured and charted. This is of some importance in the management of abscess, for a diminution in the amount of sputum will precede a rise in the temperature by some time when pocketing of pus occurs with blocking of its outlet.

The amount of sputum brought up may be in the vicinity of ten ounces. Sometimes it may not rise suddenly to this amount, as an indication that there has been a rupture into a bronchus, but gradually increase. It is reasonable, then, to consider, when the sputum reaches this amount, whether, in spite of the absence of fœtor, one is not dealing with lung abscess rather than the bronchopneumonia that had been diagnosed.

The story of chronic abscess may be difficult to distinguish from that of bronchiectasis of advanced type, though in the latter the sputum may reach an amount of over a pint in the twenty-four hours.

Physical Signs.

The routine examination of the chest is probably the least helpful investigation which can be made. A great deal too much is expected of the stethoscope in the examination of the lungs. What is heard has a very personal note, and it is of little moment to miss some supposed alteration of the breath sounds that another hears, or even to fail to detect with the stethoscope that a cavity is present, if one can arrive at the same conclusion by less haphazard means. The stethoscope is not an instrument of precision. It is very often invaluable, but not infrequently dangerously misleading. It may be a good servant, but it is a bad master. Laennec knew this of auscultation; and incidentally Auenbrugger knew it of percussion when he wrote his *"Inventum Novum ex Percussione Thoracis Humani"* in 1761. Stokes, the great Dublin physician, who deserves to be remembered by his great works on the heart and on the lungs more than for his description of ventricular standstill, many times emphasized that perspective was necessary in using these methods of examination.

Nevertheless these methods should be used systematically in every case. Such physical signs as are elicited should be duplicated with the patient in the erect and recumbent positions, and, most important of all, an endeavour should be made to draw the correct inference from them. It is useful, therefore, after the completion of the examination, and forearmed with all the information which can be elicited from the history, to sketch the physical signs on a diagram of the chest and then to translate them into terms of radiological pathology in some such terms as these: "The signs suggest an area of

breaking down consolidation in the left middle zone."

Finally, the last physical sign, and this the most important, the routine inspection of the radiogram should be employed.

Clubbing of the fingers is a common occurrence in lung abscess. It takes generally six to eight weeks to develop, varying with the length of time which the nail takes to grow. A patient was seen at Mount Sinai Hospital in New York, in whom fully developed clubbing occurred in three weeks, and in whom it disappeared with equal rapidity after she had coughed up her abscess contents. It sometimes occurs in association with subphrenic abscess, in which there is no communication with the thoracic cavity.

Clubbing of the fingers is of some diagnostic import in distinguishing lung abscess from other conditions. Thus it does not occur in uncomplicated pneumonia or in acute empyema, probably because time does not permit. It is not marked in pulmonary tuberculosis, and even in patients with very long-standing disease it does not reach the degree which may be seen when lung abscess has been present for but a fraction of the time. It is of little or no value in distinguishing lung abscess from bronchiectasis or carcinoma of the lung. Indeed a patient may present himself with the latter condition, complaining of the disability caused by hypertrophic pulmonary osteo-arthropathy.

Widening of the palpebral fissures and even some slight degree of exophthalmos are not uncommon in chronic lung conditions.

The examination of the sputum should never be neglected, not to see whether it separates into three layers or whether it contains elastic sputum, neither of which signs was ever of use in the diagnosis of the cases here considered. Most particularly it should be examined for tubercle bacilli on repeated occasions, and, of course, a negative result does not exclude pulmonary tuberculosis. On occasions patients have been operated on for lung abscess, and wisdom after the event has shown that the condition was tuberculous from its inception. A bacteriological examination may disclose the presence of anaerobic organisms and spirochætes, and on occasions hydatid hooklets, amœbæ or sulphur granules of actinomyces may be present.

The leucocyte count is generally in the region of 20,000 per cubic millimetre, but varies, of course, with the stage of the abscess and the freedom of drainage. It may be increased equally in carcinoma of the lung and be of no help in the differential diagnosis. Lipiodol should always be used in a proved or doubtful case, when tuberculosis has been excluded. It is uncommon for the oil to enter the abscess cavity, though it may be seen lying around it. Sometimes it may be seen lying in the form of discrete droplets within an opacity—evidence that it is floating in a fluid medium. This has been helpful at times when in the radiogram the abscess cavity has been obscured by the heart shadow.

Differential Diagnosis.

The diagnosis of lung abscess may be easy or of extreme difficulty, and in those cases in which no obvious ætiological factor exists it is particularly necessary that great care be taken in establishing the diagnosis.

In so far as the determination of the appropriate treatment is concerned, it is here considered to be essential to establish (*a*) that the disease is lung abscess, (*b*) that the abscess is solitary, (*c*) its position, (*d*) that it is not secondary to carcinoma of the lung or other causative condition which is in unceasing operation, for no treatment directed to the abscess alone in such a case can be of more than temporary avail. It is more the chronic abscess of insidious origin which provides the difficulty. There is no single feature, even to the duplicity of the radiograms, which may not be common to both lung abscess and carcinoma of the lung. The interrelationship is sometimes very close. By blockage of a bronchus, bronchiectasis may be set up distal to the growth, and this may develop into a bronchiectatic abscess. Abscess formation may occur in the growth itself or, lastly, in some slow-growing tumours in the lung parenchyma central necrosis and cavity formation may take place. Mistakes should be rare if a thorough examination is made. This should include bronchoscopic examination; and it is well to remember that the failure to find evidence of carcinoma in tissue removed at biopsy does not by any means negative its possible presence.

Pulmonary tuberculosis has already been mentioned in discussing the examination of the sputum. Some mention might be made here of the type of disease which is known as "basal tuberculosis". The term "basal" refers rather to its radiological position in the lower zone of the antero-posterior film than to its possible situation in a particular lobe of the lung. There may be a well marked cavity present, without very marked surrounding infiltration, or a more diffuse type of infiltration without cavity formation. The difficulty arises in that the lesion occurs in a situation where it is not usual to find it, the upper and often the middle zone being clear of any radiological evidence of disease.

The symptoms may also be sufficiently confusing to make diagnosis a matter of difficulty. It is fortunate in this respect that the examination of the sputum nearly always discloses tubercle bacilli. It is a clinical impression that this is a type of pulmonary tuberculosis in which the prognosis is unfavourable, and in a comparatively short time further radiological examination will show that the disease has spread; and the difficulties no longer exist.

Sometimes empyema has been diagnosed on physical signs and exploratory puncture, the pus being aspirated from a lung abscess. A radiogram would have prevented this mistake.

Bronchiectasis is not generally difficult to diagnose from lung abscess. Lipiodol is a great help, and it is a distinguishing feature of bronchiectatic abscess that the oil runs freely into it.

Interlobar empyema is a rare condition, is virtually a lung abscess, and should be treated as such. Laennec did 26,000 autopsies and did not describe one. This is no matter for comment really, as one would expect that the empyema would rupture into the general pleural cavity prior to death.

It is unsafe and unsound to use exploratory puncture as a means of diagnosing this condition.

Course.

What sort of course do cases of lung abscess follow? The average duration in those which terminated fatally in this series was eight months; so there is generally some degree of resistance inherent in the patient which carries him on until the peculiar nature of lung abscess, marking it out from many others and partly due to its location and to mechanical factors, as well as to its particular virulence, causes his death. Perhaps it should be remembered here that, were it not for treatment, in some cases the duration of life might have been even shorter.

Septic bronchopneumonia may terminate the illness in the acute stage. Empyema may complicate it and death may occur from toxæmia.

Cerebral abscess may occur even in the chronic abscesses in a late stage and seems to be more frequent after operative interference.

The patient may cough up his abscess; and what then? The cavity may disappear and the cure be complete, or bronchoscopic aspiration may assist.

The cavity wall may thicken and the cavity remain, for a long time, quite benign, perhaps months or years later to flare up with cough and sputum. Or recurrent hæmoptyses may occur and even end fatally. Or frequently round the thick-walled cavity bronchiectasis may occur and may spread throughout the lung, and the patient become a candidate for thoracoplasty.

Treatment.

Prevention.

It should be emphasized here that lung abscess is a rare complication of those conditions in which we have fairly full knowledge of the relationship. Thus it is said to occur something like once to every 2,500 tonsillectomies.[6] All precautions which are humanly possible are presumed to be taken against an aspiration abscess, and there seems little else to suggest on this score.

Management.

The treatment of an acute abscess, as regards nursing and dieting, is on the lines of that employed in pneumonia. Deodorants may be used, such as creosote or guaiacol. Measures may be necessary to allay the cough. Arsenical preparations may be used for their known action on spirochætes. Other than as possible agents in reducing the fœtor and sometimes the amount of sputum, there is no convincing evidence that they are of value, and striking results from their exhibition are seldom seen.

In cases in which no ætiological factor can be found, anti-amœbic treatment may be tried. Whether in the belief that some of these obscure abscesses are amœbic in origin or purely in an empirical fashion, it is difficult to say, but Léon-Kindberg[4] suggests that every patient in whom no definite cause is found should have a course of anti-amœbic treatment. It has been used at Brompton Hospital and, it is said, with at times some symptomatic improvement.

Postural Drainage.—As the radiological appearances show that the abscess is becoming more circumscribed, or at times even before this, postural drainage should be instituted. "Tipping" has been used as a synonym for this, where actually hanging the patient over the bed, head down, may have the reverse effect. This procedure pays no regard to the site of the abscess, but seems mainly concerned with getting the head low, in the hope that this is promoting dependent drainage.

It is quite obvious that an abscess in the upper lobe will not drain by this method, for the pus has first to find its way down the related bronchus and then up the trachea. Perhaps that is one reason why upper lobe abscesses are said to have a more favourable prognosis than those in other situations, as in the upright position the pus is likely to drain down to the main bronchial stem, whence the cough will expel it.

The expulsive force of cough is feeble in the fine divisions of the bronchial tree, and increases greatly as the larynx is approached.[3] Pus can be tolerated in considerable amounts in the more distal tubes.

The posture must be such that the bronchus leading from the affected area is dependent and that the bifurcation of the trachea is the centre to which drainage is directed, and not the mouth. There is no reason why this posture may not be maintained continuously in a suitable bed.[7] Adequate localization of the abscess is therefore essential for satisfactory drainage.

It is well now to pause and to think what may be the results of medical treatment (and one might include here bronchoscopic drainage) and how long it is desirable to continue these measures.

The most favourable result is complete discharge of the abscess contents through the related bronchus, and closure of the cavity. This may occur in an acute abscess which becomes localized and forms a cavity, the walls of which subsequently approximate to one another. A second result is the discharge of the abscess contents, subsidence of symptoms, and the lung is left with a dry cavity.

A chronic cavity in the lung is a potential source of danger from recurring infection, hæmoptysis, secondary bronchiectasis in the neighbouring portions of the lung and, more remotely, from cerebral abscess. Sooner or later one or other of these complications is likely to arise. In such a case medical treatment may be said to have failed, and no postural drainage or other method of treatment so far mentioned will have any but a temporizing effect. It is well to remember this, for it is not uncommon to find a patient regarded as cured who still has a cavity in his lung.

A third course may be followed and the patient may die from septic bronchopneumonia without ever having coughed up his abscess.

How long should medical treatment be continued? The surgeons say that the patients reach them too late, and it might equally be said that, through no one's fault, in those cases insidious in origin and chronic in nature they also reach the physician too late.

It is difficult to put a term to the duration of medical treatment, and no dogmatic statement of weeks or months will fit the individual case. The statement is sometimes made that the sixth to the eighth week is the time for intervention in the acute and subacute types. From the physician's point of view, medical treatment should be continued until the patient is definitely going down hill, until the successful evacuation and closure of the cavity occur, or until such time as it is obvious that the cavity is not going to close.

Even when the patient is seen for the first time with a chronic cavity, and an operation is deemed necessary, some improvement in the patient's condition may be obtained with postural drainage and bronchoscopic aspiration before the operation is embarked on.

Surgical Drainage.—If the patient be definitely going down hill, surgical intervention may be life-saving, though there should be some radiological evidence of localization. To operate without such evidence may only hasten the patient's exit.

Pleural adhesions are first promoted with an extrapleural iodine pack and then, a week later, an exploratory puncture is made and, when pus is found, a track is produced by diathermy along the needle which has been left *in situ*. The abscess is then laid widely open, tissue being removed with a diathermy loop, and the cavity is packed. Later the packing is removed and a drainage tube is introduced and gradually shortened until the cavity is closed. An abscess opened in such a stage corresponds with the carbuncle of which I have spoken. Fresh pockets, not communicating with the main abscess cavity, will often occur after drainage and require reopening. They may be seen showing small fluid levels in an erect radiogram.

Complications of the operation occur all too frequently in that bronchial fistulæ are always present, and often, after closure of the cavity, a fresh pocket forms. The patient is still liable to the risks of hæmoptysis and secondary bronchiectasis. Often he may be best off with a small soft tube left in for an indefinite period. This is a formidable list of complications and might leave the impression that the cure is worse than the disease. There is no doubt that there are times when this operation must be undertaken, and the results are not always unfavourable.

Chronic cavities are always difficult to close. Some of them are said to be lined with stratified epithelium. To opening and draining them there are the objections already mentioned. When there are widespread bronchiectasis and not a very large cavity, thoracoplasty may be necessary, but in general it is not a very successful operation.

Of the use of extrapleural pneumolysis, advocated in various forms by Tuffier and Sauerbruch, I have seen but little, and that not encouraging.

Phrenic evulsion as an isolated procedure directed to the cure of lung abscess is of little value, but there are stages in the course of the disease in which this operation might be considered, as, for example, in an endeavour to relieve tension in the neighbourhood of a cavity and so to obviate the advancement of secondary bronchiectasis.

Lobectomy.—With the great improvement in technique and the better selection of cases, it is probable that lobectomy is the operation of choice. This is certainly so for a chronic abscess with surrounding bronchiectasis. Indeed it might be said that for chronic abscess suitably situated, whether there be secondary bronchiectasis or not, lobectomy should be seriously considered, for the results of opening and draining chronic cavities may be as crippling as the disease for which the operation was performed. Incidentally the latter operation greatly increases the difficulties of a subsequent lobectomy.

Artificial Pneumothorax.—Though artificial pneumothorax treatment still has its advocates, it may be a dangerous procedure unless there is free communication with a bronchus and the abscess is centrally situated. It should be looked on as a means of closing a cavity which is not too thick in the wall, or as a means of controlling hæmoptysis when this is the only troublesome symptom in a chronic abscess and there is a free pleural space. In other cases there is grave danger of rupture into the pleural cavity and of the development of pyopneumothorax. Should operation be necessary after the induction of artificial pneumothorax, there is the added difficulty that valuable time is lost while the lung is reexpanding, for it is unsafe to operate across a free pleural space.

Results of Treatment.

Of those among the 85 patients who were treated by purely medical methods, 61% showed amelioration. That is to say, they had no disability and no purulent sputum, or slight disability with a small amount of purulent sputum, but all were fit for work.

Of those treated by surgical methods, 49% showed no disability and a healed sinus, or slight disability with a wound still draining, but again all were fit for work. The rest of the patients thus treated in both series are grossly disabled or dead. No comparison can be drawn from these figures between medical and surgical treatment, and it is difficult to vaunt any particular treatment as a sovereign remedy in the treatment of lung abscess. It is difficult also to see any lines along which the treatment of acute and subacute abscesses will develop further, unless it be with the more intelligent and intensive use of postural and bronchoscopic drainage. The latter subject will be dealt with by Dr. Blaubaum in the discussion on this

paper. The use of the two-stage drainage operation, though life-saving at times, has many inherent disadvantages, and the results are disappointing.

It is the writer's belief that the use of surgery lies not in earlier intervention, except as a matter of great urgency; rather that every chance should be given the patient to close the cavity by postural and bronchoscopic drainage, where this appears possible, and only on the definite failure of these should operation be performed. If this be early, then there seems no course open other than a two-stage drainage operation. When a definite cavity has formed, then the soundest method of treatment is to remove the affected lobe. With adequate care in the selection of cases and, what is of paramount importance, skilled attention during the post-operative course, the operation in expert hands offers the patient a chance of permanent cure. In a series of 58 cases recently published by Tudor Edwards and Thomas,[2] the mortality for bronchiectasis was 14%. Faced with the dismal prospects so often in store for patients with lung abscess, it must be admitted that an equal mortality rate for the latter would still make the physician and the surgeon incline to afford the patient the chance which this operation offers. It is, of course, understood that the patient be kept under observation and that operation be undertaken only when his condition and his symptoms point to this being advisable.

Lest it seem that the radiological signs have been exalted to an unduly prominent position, the words of William Stokes,[9] written just one hundred years ago, might be quoted here:

> In the cases we are every day called to treat the value of physical signs must be tested by the history and symptoms, and these in turn must be corrected by the physical signs. Whoever neglects either source of information will fall into the most fatal errors. We must have recourse to the assistance of each and every one of these, and even still with all this combined knowledge we shall meet with cases the real nature of which is involved in the greatest obscurity.

And these from a humble physician who lived over two thousand years before Stokes:

> Life is short, the art is long, occasion sudden, experience fallible, and judgment difficult.

Summary.

1. The paper deals with the diagnosis and treatment of lung abscess which is solitary and not due to causes in themselves fatal.
2. The ætiology, in so far as it bears on diagnosis, is discussed. The necessity for the more rigid diagnosis of bronchopneumonia is stressed.
3. The radiological pathology is dealt with and its importance is emphasized.
4. The symptomatology and the signs in relation to diagnosis are discussed.
5. The course and the complications which may attend it are followed.
6. The present position of medical and surgical treatment is considered, and some thought is given to possible advances which might be made.

Acknowledgements.

I am indebted to Dr. F. C. Roles and Dr. G. S. Todd for the figures which are quoted here. They represent about half of a series which will shortly be published by them. For the use of the case notes and the radiograms which were demonstrated with the paper I have to thank the physicians and the surgeons of Brompton Hospital.

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SUICIDE IN AUSTRALIA.

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THIS paper is based on statistical information furnished by the various State statisticians, and also on 1,862 consecutive unselected cases of suicide in New South Wales from January, 1913, to April, 1920. The paper is a preliminary communication of an intensive study of suicide in New South Wales now being undertaken, and is confined to broad outlines.

In 1931-32 suicide caused more deaths in New South Wales than did, *inter alia*, typhoid fever, the exanthemata, most bacterial diseases, tuberculous diseases other than phthisis, cirrhosis of the liver, and even childbirth.[1] It has been said in America that "under present conditions, out of every thousand infants born, ten males and three females will eventually take their own lives".[2] As suicide is thus a rather important cause of death, the surprisingly scanty literature seems inexplicable.

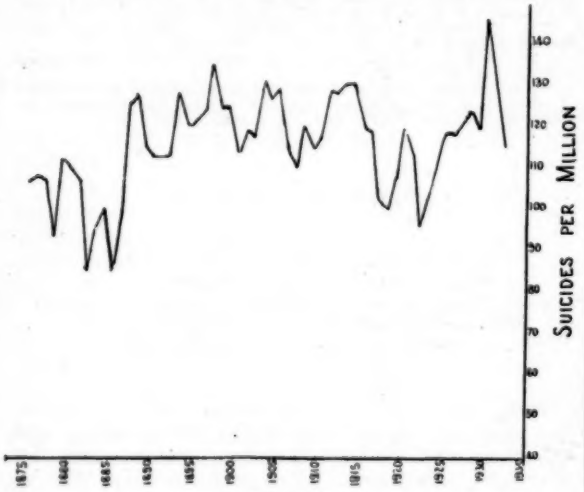
Suicide in the Principal Countries of the World.[3]

In 1930 the suicide rate per 100,000 of the population ranged from 2·8 in the Irish Free State and 3·5 in Spain to 26·1 in Switzerland, 27·8 in Germany and 39·9 in Austria. With a few exceptions the rate in the British Empire for many years past has been consistently between 10 and 15. Ireland and Scotland have always had rates below that of England, whilst Canada's rate is below that of the other Dominions. Suicide is

relatively more common in Australia than it is in England, whilst in turn New Zealand has a trifle higher suicide rate than Australia.

Statistics for Australia.

The only comprehensive survey of suicide in Australia, that I am aware of, was published officially in 1912.[4] The survey covered a total of 15,242 suicides occurring between 1868 and 1910. The mean suicide rate during this period was 114·48 per million of the population. Although a yearly graph of the rates showed an undoubted periodicity in the incidence of suicide, that rate was fairly constant, never varying in any one year more than ± 21 from the mean. Each year from 1911 to 1932 the rate, with the single exception of the record year 1930, has remained also within the fixed limit ± 21 from the mean (Graph I).



GRAPH I.
Suicides in Australia.

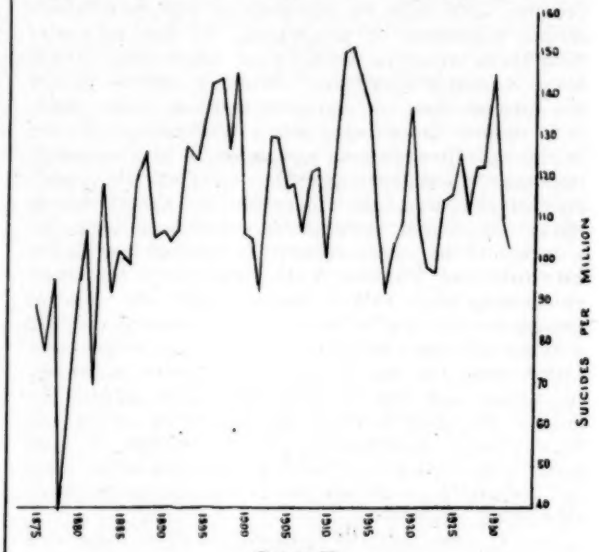
The suicide rate in Australia therefore remained fairly constant from 1868 to 1932.

Graph I, however, shows that during the 57 years under review there has been a periodic rise and fall in the incidence of suicide. The 1912 report showed that the peaks occurred at times when there was excessive speculation in land, silver and gold. The record in 1930 corresponds to the beginning of the present financial depression.

The record years in New South Wales were in 1912 and 1913, when suicide rates of over 150 per million of the population were reached (Graph II). The years 1911 and 1912 were years of record immigration to the State.[5] Is it that these record years of suicides were due to the record influx of immigrants, who, as will be seen later, are more prone to suicide than native-born Australians?

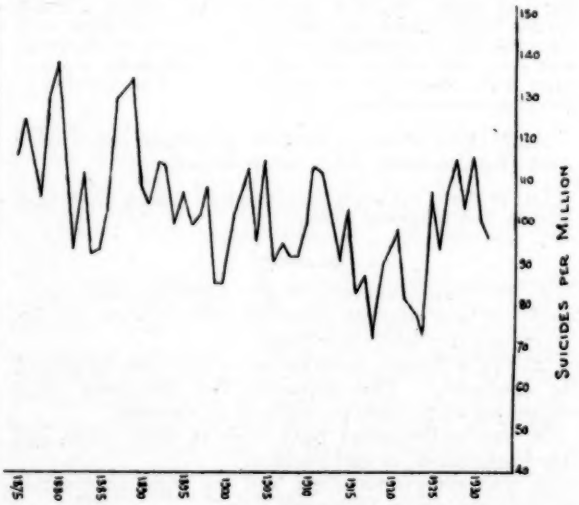
It is also a curious fact that in times of economic crisis, such as from 1893 to 1899, and from 1929 to 1932, when suicide rates in New South Wales were high, there was an excess of departures over arrivals from overseas. It would almost seem as if in times of national crisis those who were apprehensive left the country, whilst those who could not get away suicided.

Suicide in all the States shows a periodic rise and fall (Graphs II to VII). The cycle in all the States is, roughly, about seventeen years. The general tendency is for the peaks to become increasingly higher. In the case of Victoria the opposite holds



GRAPH II.
Suicides in New South Wales.

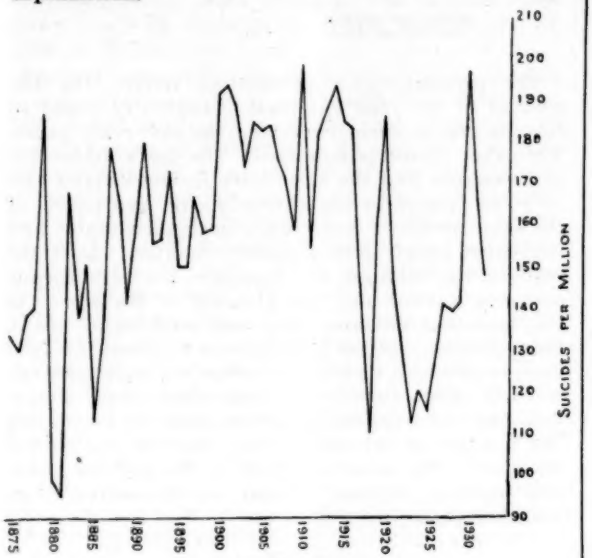
good (Graph III). The cycle is most marked in New South Wales, where for the past fifty years an almost symmetrical rise and fall can be seen.



GRAPH III.
Suicides in Victoria.

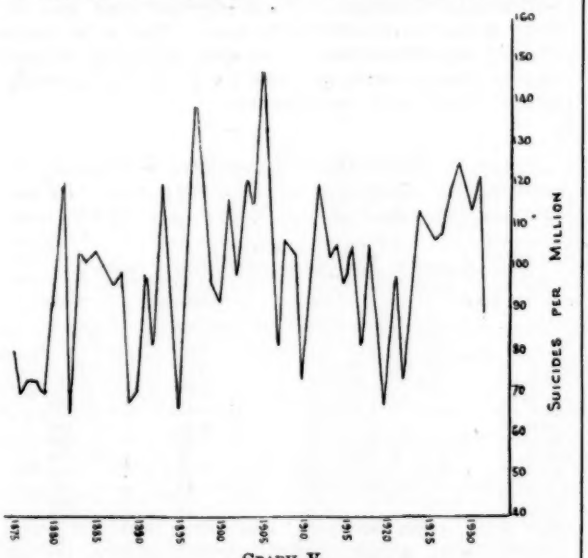
The reason for this periodicity is not clear. A graph (VIII) showing the admissions and readmissions to the mental hospitals of New South Wales

since 1879[6] shows a tendency to some periodicity in the incidence of mental disease in this State. The result is so unexpected that it baffles explanation.



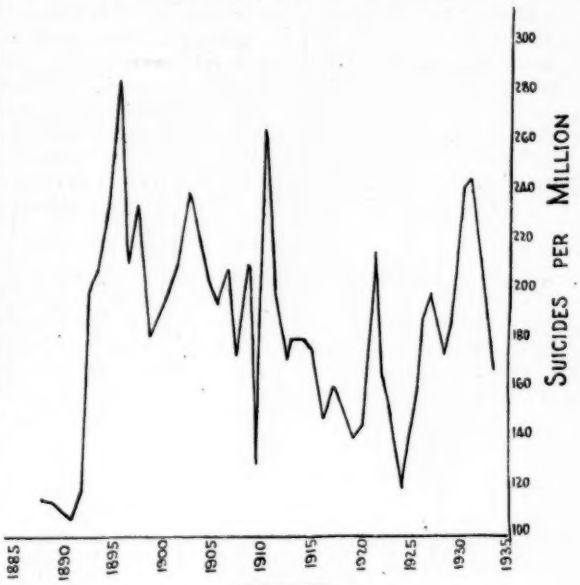
GRAPH IV.
Suicides in Queensland.

Arguing from the analogy of menstruation in women and the cyclic phases of manic-depressive insanity, it is easy to say that there must be a cyclic variation in all human activities, but the explanation, even if this be true, is at present beyond us. The graphs, however, show us that it will be impos-



GRAPH V.
Suicides in South Australia.

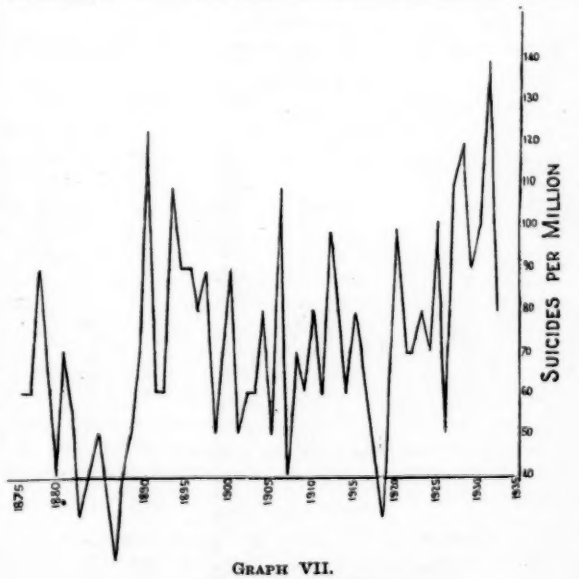
sible to tell definitely until many more years have elapsed, whether suicide or insanity is increasing or decreasing. The true position is summed up in the 1912 article, when the author stated that whilst the suicide curve in Australia showed an upward tendency, with the tendency for the increase to become less each year, it would take at least



GRAPH VI.
Suicides in Western Australia.

another fifty years to show whether his deductions were correct or otherwise.

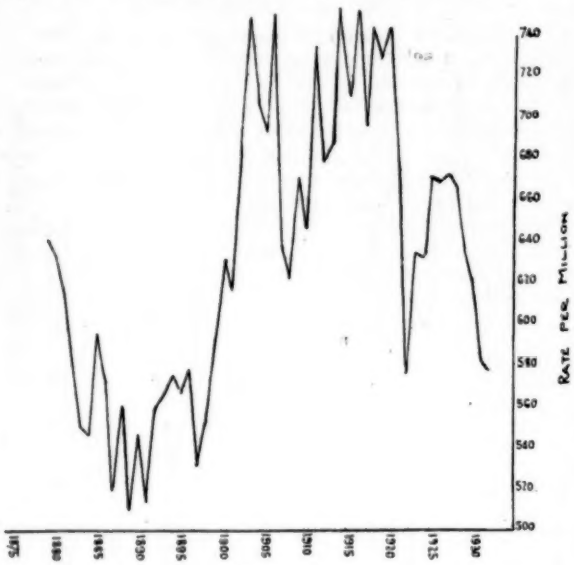
The suicide rates in the various States vary considerably. Tasmania has the lowest suicide rate in



GRAPH VII.
Suicides in Tasmania.

the Commonwealth, and Western Australia and Queensland have the highest. Furthermore, the rates progressively increase as we go northwards

from Tasmania. Victoria and South Australia have rates much in common. New South Wales has a higher rate than Victoria, whilst Queensland in turn has a higher rate than New South Wales.



GRAPH VIII.

Showing admissions to mental hospitals in New South Wales.

Now Table I shows that suicide is more common in spring and summer than it is in autumn and winter. Most suicides occurred in January, the fewest in June.

TABLE I.

Showing Suicides in New South Wales, Month by Month, from January, 1913, to December, 1919.

Month.	Males.	Females.	Total.
January	155	33	188
February	100	32	132
March	116	26	142
April	106	33	139
May	107	34	141
June	97	19	116
July	119	35	154
August	102	33	135
September	122	40	162
October	132	30	162
November	129	30	159
December	123	35	158
Total	1,408	380	1,788

TABLE Ia.

Table I according to Seasons.

Season.	Number of Suicides.
Spring	483
Summer	478
Autumn	422
Winter	405
Total	1,788

TABLE Ib.

Seasons.	Number of Suicides.
Spring and summer	961
Autumn and winter	827

The preponderance of suicides during the hot months of the year has been consistently found in Europe and in America during the past sixty years. The exact reason is unknown. The low suicide rate in Tasmania and the high rates in Queensland and Western Australia are evidently part and parcel of the same problem. Is it that emotionally stable and contented people prefer colder climates, whilst the restless, the unhappy, the destitute, the adventurous seek the warmth and the glamour of the sun? Is life in colder climates calm and placid and life in hot climates restless and feverish? Does the cold have a "bracing and tonic" effect on us, whilst the warmth "denervates" us? And what effect, if any, does the excessive use of alcohol have in increasing the number of suicides in hot weather and in hot climates? The exact solution to the problem, however obvious it may appear on the surface, on searching analysis, eludes us.

Sex.

Of the 1,862 persons in the series, 1,468 were males and 394 females, a ratio of 26·8 females to 100 males. This sex ratio is within the limits of that found in most civilized countries.[7]

However, of 824 persons officially known as having attempted suicide in New South Wales from 1930 to 1934, there were 532 males and 292 females, or 54·9 females to 100 males.[8] This would seem to indicate that women are less efficient than men in their methods of self-destruction. But it is one's clinical experience that attempted suicide in women is too often a mere gesture, an hysterical episode to force their will on others.

Age.

Table II shows that women have a tendency to suicide at a much younger age than men. Of the females 33% and of the males only 17·8% were

TABLE II.

Showing the Age at Death in 1,862 Cases of Suicide.

Age.	Males.	Females.	Total.
Years.			
10 to 14	2	2	4
15 to 19	25	33	58
20 to 24	72	43	115
25 to 29	135	50	185
30 to 34	140	52	192
35 to 39	169	40	209
40 to 44	146	33	179
45 to 49	144	47	191
50 to 54	142	24	166
55 to 59	107	28	135
60 to 64	91	18	109
65 to 69	65	7	72
70 to 74	37	9	46
75 to 79	29	1	30
80 to 84	9	—	9
85 to 89	1	1	2
Not stated	154	6	160
Total	1,468	394	1,862

under 30 at death. On the other hand, 36·6% of the males and only 22·7% of the females were over 50. The average at death in the case of the females was 38·6 years, in the males 43 years. The two extremes were 14 and 85 years in the males, and 12 and 87 years in the females.

The 1912 report[9] showed that the risk of suicide in males in Australia progressively rose from less than 10 per million between the ages of 10 and 14 to a maximum of 600 between 60 and 64. The risk then steadily fell to about 550 between 85 and 90. In females, at no age period was the risk greater than 90. This maximum risk was reached about the age of 40, and remained practically the same until extreme old age. Much the same result has been found in America.[10]

The case material examined gives one the impression that women easily upset by love affairs and by worry when young acquire patience and tolerance as they grow older and seek solace in religion and children. Curiously enough, illegitimate pregnancy seems to be an infrequent cause of suicide. Men, on the other hand, dominated by ambition in their youth, tend to become lonelier as the years go by, to be obsessed with a sense of futility and failure, and are depressed by illnesses, by worries and often by those very alcoholic excesses in which they seek oblivion.

Social Condition.

In round figures the percentage of those married, single and widowed in the community, and over the age of 15 years, may be taken as 56 married, 38 single, and 6 widowed.[11] Taking the community as a whole, Table III, incomplete as it is, would indicate that social condition in itself has little influence on suicide. But the indications are that single men are more prone to self-destruction than spinsters, whilst widows suicide relatively much more freely than do widowers.

TABLE III.

Social Condition in 1,862 Cases of Suicide.

Social Condition.	Male.		Female.		Total.	
	Whole Series.	Percentage whose Social Condition is Known.	Whole Series.	Percentage whose Social Condition is Known.	Whole Series.	Percentage whose Social Condition is Known.
Married ..	571	55	223	59	794	56
Single ..	408	39	113	30	521	37
Widowed	59	6	38	10	97	7
Divorced ..	4	—	2	—	6	—
Not stated	426	—	18	—	444	—
Total	1,468	—	394	—	1,862	—

One hundred and ten married men and 38 married women suicided whilst living apart from their spouses. In addition to those living apart from their spouses, 342 males and 18 females were either living alone or had no relatives or friends. The identity of 44 of the males and of 5 of the females has never been discovered. This would indicate that loneliness, whether it be the result of an unhappy marriage, of widowhood, or the absence of friends to sympathize in illness, sorrow or worry, is a powerful predisposing cause of self-destruction.

Cavan,[12] Dublin and Bunzel,[13] and other authors agree that Roman Catholics and Jews are less prone to self-destruction than those professing other religions. Cavan states that both religions not only forbid suicide, but also take a material interest in their members in times of sorrow and distress. That religion *per se* must be a powerful antidote to suicidal impulses is shown by the fact that only two clergymen appear in this series.

Nationality.

Of the 1,722 persons whose nationality is known, 1,117, or 64·9%, were born in Australasia, the remaining 35·1% elsewhere. Furthermore, only 58·3% of the males and 77·4% of the females were native-born Australians. This contrasts sharply with the 84·4% of native-born Australians in New South Wales in 1925-1926.[14]

TABLE IV.

Nationality of 1,862 Persons who Suicided.

Nativity.	Males.	Females.	Total.
Australia	778	301	1,079 [1]
New Zealand	28	10	38
England	273	48	322
Ireland	68	10	78 [2]
Scotland	52	10	62
British Empire (not elsewhere included)	11	—	11
Europe	91	5	96
Elsewhere	33	3	36
Not ascertained	134	6	140
Total	1,468	394	1,862

[1] Total for Australasia: 1,117.
[2] Total for British Isles: 462.

Suicide is therefore relatively far more common in immigrants than in native-born Australians. Many recent arrivals in the State were destitute and had no relatives or friends in the country. Some were victims of nostalgia or mental disease. On the other hand, many had been in Australia for more than forty years.

It will be noticed, too, that Englishmen are more prone to suicide than Irishmen or Scotchmen. Thirty-one, or 2·3%, of the males were Germans, an unduly high percentage. Curiously enough, there were 19 Chinese in the series, showing that the Chinese are not so passive or resigned to adversity as the public believes. Only one full-blooded aboriginal was met with. The indications are, therefore, that racial tendencies to suicide are preserved in New South Wales.

Occupation.

The occupations of the patients were many and varied. The males included representatives of all walks of life, from professional men to prisoners, swagmen and outcasts. The females included women of high social status and women who had sunk to the lowest depths of degradation, their very identity unknown.

An analysis of the influence of occupation on suicide in England shows that suicide is more prevalent at the two extremes of social life, that is, amongst those following high professional careers and those at the opposite extreme, the destitute, the swagmen and inmates of institutions. The tendency is for the high professional classes to have a higher suicide rate than any others.[15]

Locality.

Table VI shows that, proportionately, for every 100 suicides occurring in the rest of the State, 124 occur in Sydney. In the case of the males the difference is not marked; in the case of females the difference is nearly two and a half times as great.

TABLE V.

Showing Locality where 1,862 Cases of Suicide Occurred.[1]

Place.	Male.		Female.		Total.	
	Number in Whole Series.	Percentage.	Number in Whole Series.	Percentage.	Number in Whole Series.	Percentage.
Sydney–Metropolitan Area (see Note A)	693	47·2	254	67·1	947	50·9
Rest of State	772	52·6	139	32·6	911	48·9
At sea ..	3	0·2	1	0·3	4	0·2
Total ..	1,468	100·0	394	100·0	1,862	100·0

[1] The population in the Sydney metropolitan area in 1929 was 45·6% (see Notes A and B) and the rest of the State 54·4%.

NOTE A.—Metropolitan includes area defined in State Statistical Register for New South Wales, 1931–1932, Part VI, page 510.

NOTE B.—Parramatta, Bankstown and district were included in the metropolitan area for the first time in 1929. The metropolitan population was then proportionately higher than the rest of the State than it was from 1913 to 1920. Hence the suicide rate of the metropolitan area compared with the rest of the State is actually higher in the years 1913 to 1920 than is shown in Table VI.

TABLE VI.

Comparison of Suicide in Sydney and Rest of State on Proportionate Basis.

Sex.	Rest of State.	Sydney.
Male	100	107
Female	100	240
Total	100	124

That suicide is more common in cities than in the country is true of most civilized countries.[16][17] The more highly civilized conditions in the city, its greater restlessness, its feverish activity, compared with calm, orderly and companionable life in the country, are generally regarded as the true reasons. That the difference may be mostly due to the disproportionate number of females suiciding in the city compared with the country has escaped the notice of the authorities consulted. Is it that life in the country, with its more natural home life, offers a much happier life for women than the feverish life in the city?

Methods of Suicide.

Five chief methods of suicide were used, namely, poison, the use of firearms, cutting and piercing with sharp instruments, hanging and drowning. These, taken together, accounted for 94% of the deaths. Poison and the use of firearms were used in over 50% of the cases.

TABLE VII.

Showing Methods used in 1,862 Cases of Suicide.

Method.	Male.	Female.	Total.
Poison	315	205	520
Firearms	480	24	504
Cutting	242	13	255
Drowning	169	71	240
Hanging *et cetera*	180	45	225
Precipitation from height	32	19	51
Under trains *et cetera*	31	8	39
Burning	—	5	5
Double methods	18	4	22
Unknown	1	—	1
Total	1,468	394	1,842

The methods varied in the two sexes. Males preferred firearms, poison and cutting methods. Females favoured poison, hanging and drowning. More than one-half of the women and less than one-quarter of the men poisoned themselves. Women avoided mutilating methods. Their natural vanity and incomprehensible reasoning are shown by the fact that many had a bath and put on a clean night-dress before drowning or poisoning themselves.

Women preferred carbolic acid preparations; men, strychnine. Some women and a few men chose fantastic poisons, such as strong mineral acids and alkalis, iodine, phosphorus and perchloride of mercury. Five women burned themselves to death. Fashions in suicide were met with. Jumping over the Gap (a high headland near Sydney Heads) became more and more popular as the years went by. Within a few weeks four persons threw themselves under moving trains at the same place on a suburban line in Sydney. A suicide by an unusual method was often followed shortly afterwards by a suicide by exactly the same method.

TABLE VIIA.

Showing Poisons Used.

Name of Poison.	Male.	Female.	Total.
Carbolic acid, lysol *et cetera*	96	119	215
Strychnine	115	36	151
Potassium cyanide *et cetera* ..	48	4	52
Opium, its salts *et cetera* ..	17	5	22
Acids (not elsewhere included) ..	10	10	20
Arsenic	8	8	16
Phosphorus and its preparations ..	5	6	11
Coal gas	5	2	7
Alkalis (not elsewhere included) ..	3	2	5
All others: Nicotine, iodine, veronal *et cetera*	8	13	21
Total	315	205	520

Twenty-two persons chose double methods. Some took poison before shooting themselves; others shot themselves before jumping into deep water. The most illogical method of taking poison before

jumping under a moving train was met with more than once.

It is well recognized that methods of suicide vary from nation to nation, from state to state, from country to city. It varies in the same country from year to year.[18] It would appear as if those who want to suicide seize the method at hand and use it.

TABLE VIIB.
Showing Method of Use of Firearms.

Type of Firearm and Where Injury Sustained.	Male.	Female.	Total.
Revolver.			
Head	255	4	259
Chest	28	7	35
Other	5	—	5
Total Revolver	288	11	299
Other firearms.			
Head	165	8	173
Chest	23	5	28
Abdomen	2	—	2
Total other firearms	190	13	203
Detonator in mouth	2	—	2
Grand total	480	24	504

General Impressions from Data Examined.

The history of the cases examined gives one the impression that persons suiciding can be roughly subdivided into four great classes: those physically ill, those with mental diseases, those with definite psychological worries, and alcoholics. No sharp line of demarcation is possible between the classes. The worried person may take alcohol and suicide whilst under its influence; the alcoholic may suicide whilst definitely worried. The difficulty at times of deciding whether a worried person is insane or otherwise is a source of bitter experience to most psychiatrists. Would not this difficulty be responsible for the wide divergence of opinion (18% to over 60%) in the statistics of the number of insane amongst those who suicide?[19]

The clinical history in a majority of the cases is almost standardized: worry, depression, persistent insomnia, no appetite, perhaps agitation and restlessness. Many of them suicided whilst they "were away for a change". Should not the logical treatment of these patients have been rest in bed and treatment by hypnotics day and night for weeks at a time? And if the logical treatment had been used, could not many of these suicides have been prevented?

In about 10% of the cases no cause for the suicide can be given. Young and reserved girls especially skilfully conceal their thoughts and for no apparent reason and without the slightest warning wilfully end their lives.

The causes of the suicides given are in themselves too diverse and too contradictory to be of much use in the understanding of self-destruction. Some suicided after they had been jilted, and others after they had become engaged to be married. Some suicided because they had been rejected as unsuitable for active service abroad, and others because they had been accepted. Some suicided after struggling for years against grave and pressing worries, and others after a trivial domestic quarrel. It is my opinion that many of the patients had long been predisposed to self-destruction for various causes and the assigned cause was the last straw. The true cause of suicide must be sought in a study of the patient himself, and we strike here a field about which remarkably little is known.

There were very few instances of a family history of suicide. It has long been suggested that suicide "runs in families".[20]

Judging by the records consulted, few families must escape the history of having at least one member, near or remote, wilfully terminating his life. It is difficult to see how an act, the end result of temperamental and racial characteristics, of environment, of experiences and thoughts peculiar to the individual himself, could be the result of hereditary transmission. If suicides occur frequently in a family, something which must be decidedly uncommon, should we not blame family tradition and not hereditary influences?

Only one example of "suicide pact" was met with. In two other cases the pact was made between two persons, but only one of them carried it out. It must be rare for two persons to agree to die together. It must be still rarer for them to carry out the pact.

On the other hand, 58 males and 14 females (a total of 72, or 3·9% of the total number) suicided after they had committed murder or made an attempt at murder. In only very few cases did the patient suicide to escape justice. More often was the murder and suicide a deliberate policy actuated by unrequited love, an unhappy marriage or by ideas of infidelity, which were often the result of a delusional system, so frequently found in chronic alcoholism. In a few women and occasionally in men was the suicide preceded by the murder of children.

That one suicide in twenty-six follows in the wake of murder or attempted murder is a most surprising fact. What is more surprising is that only four of these persons had been patients in mental hospitals. Contrary to public opinion and the fear of newspapers, it would appear that the risk of a patient discharged from a mental hospital committing murder and then suiciding is extremely remote.

As a contrast to the frequency of murder and suicide, no suicide following rape or any violent sexual crime was met with. Those who commit sexual crimes have evidently little or no tendency to suicide afterwards.

Summary.

1. Suicide in Australia remained fairly constant from 1868 to 1932.

2. There was a tendency to a periodic rise and fall. The peaks corresponded to times of excessive speculation in land, silver and gold.

3. Tasmania has the lowest suicide rate in the Commonwealth, and Western Australia and Queensland have the highest.

4. The suicide rates in the various States increase progressively as we go northwards from Tasmania.

5. Suicide is more prevalent in the hot months of the year than in the cold months.

6. The sex incidence in 1,862 cases of suicide was 26·8 females to 100 males.

7. Women have a tendency to suicide at a much younger age than men.

8. Social condition has little influence on self-destruction, although bachelors are more prone to suicide than spinsters, and widows much more so than widowers.

9. Immigrants are much more prone to self-destruction than are native-born Australians.

10. Suicide is more common in the Sydney metropolitan area than in the rest of New South Wales. Females suicide two and a half times more in the metropolitan area than in the rest of the State.

11. The methods of suicide vary in the two sexes. More than 50% of the females poisoned themselves.

12. The causes of suicide were most diverse and contradictory.

13. The influence of heredity was not marked in the series.

14. Only one case of "suicide pact" was met with.

15. Seventy-two, or 3·9%, of the cases were examples of associated murder and suicide. Only four of the patients guilty of murder and suicide had been patients in mental hospitals.

16. No instance of associated sexual crime and suicide was met with.

Acknowledgements.

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I have to thank the Honourable L. O. Martin, Minister for Justice in New South Wales, who so readily gave me permission to examine the Coroner's depositions, from which the data in this paper have been obtained. Without access to the Coroner's depositions this paper could not have been written.

I have also to thank Mr. W. B. Geddes, Under-Secretary for Justice, New South Wales, who gave me every facility for examining the records; and also the various State statisticians and heads of departments for forwarding me the statistics required.

I have also to thank Mr. Ivor Callen, B.Sc., of Stockton, New South Wales, for his help in preparing the graphs.

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(15) Dublin and Bunzel: *Loco citato*, pages 93, 109 and 399.
(16) Cavan: *Loco citato*, page 45 *et sequentes*.
(17) Dublin and Bunzel: *Loco citato*, page 75 *et sequentes*.
(18) Dublin and Bunzel: *Loco citato*, pages 112-134.
(19) Dublin and Bunzel: *Loco citato*, pages 56-71.
(20) S. A. K. Strachan: "Suicide and Insanity", 1893, page 70 *et sequentes*.

A NOTE ON THE INCIDENCE OF RHEUMATIC INFECTIONS IN AUSTRALIA.

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RHEUMATIC FEVER is a disease of the northern temperate zone, and its maximum incidence is in certain areas of Europe, particularly England. The highest death rate in acute rheumatism in Great Britain is found in the western counties of England.(2) The combination of high average rainfall and low mean temperature, associated with an excessive degree of dampness in the soil, may be factors in this distribution of rheumatism.(1)

Many observers have called attention to the extreme rarity of rheumatic fever and of its sequelæ in the tropical countries. Leonard Rogers, in 4,800 *post mortem* examinations in Calcutta, found only one case of rheumatic carditis,(3) and makes the statement that "in India rheumatic endocarditis was quite absent, although other streptococcal infections were otherwise frequent".(4)

The absence of rheumatic fever is not confined to India, for T. Clarke found that among 204,715 admissions to hospitals in the tropics, only 18 cases of rheumatic fever were recorded,(5) and in thirty-three years of medical practice in the tropics Clarke had never seen a case of rheumatic fever, chorea or rheumatic heart disease.(6)

Certain other wholly unrelated diseases, such as pernicious anæmia, exophthalmic goitre and *angina pectoris*, are also relatively less common in the tropics than in temperate zones.(7)

During a careful review of hospital figures from the United States of America, Seegal found that the incidence of the rheumatic diseases progressively increased as he passed from the southern to the more northern States(8) and that the type of the disease varied from city to city. The incidence of rheumatic heart disease was infinitely greater in Boston than in New Orleans, and the mortality of rheumatism was much lower in the warmer southern States.

An examination of the vital statistics for Australia suggests that the death rate from chronic rheumatism is higher in the southern States than in Queensland. For example, in 1931 the death rate from chronic rheumatism per million of population was 34 in Queensland, 47 in New South Wales, and 77 in Victoria, these figures being taken from the certification of deaths according to the international classification of diseases.[9]

A further inquiry was therefore carried out by circularizing a *questionnaire* to all the larger hospitals in Australia and New Zealand with the intention of comparing the incidence of rheumatic fever, chorea, rheumatoid arthritis and rheumatic heart disease in the different latitudes. The results of this survey were disappointing, in spite of the assistance of the medical and clerical staffs of the various hospitals. The scattered population of the tropical areas of Australia and the lack of hospital records in the sparsely settled districts render an accurate statistical survey almost impossible. In general the figures obtained confirm the opinion that rheumatic infections are more common and more severe in southern Australasia than in the tropical north.

For example, in Cairns (latitude 17° south) there were only three cases of chorea in eleven years, while in the Children's Hospital alone in Melbourne there is an average of over forty patients suffering from chorea admitted each year.

The mortality of rheumatic fever in Cairns is 0·75% in 666 cases; in Rockhampton it is 0·88% in 225 cases (latitude 23° south), in Brisbane it is 2·43% in 246 cases (latitude 27° south), and in Sydney it is 3·48% in 803 cases from three general hospitals (latitude 34° south). In Dunedin, New Zealand (latitude 46° south) the mortality of acute rheumatic fever is 5·79%, but the other New Zealand cities present mortality statistics similar to those of the southern Australian States.

Although the above figures suggest that the severity of rheumatic fever varies with the latitude, other factors, such as the more urban character of the population in the south, possibly play some part.[10] Further, the population in many of the towns surveyed is not fixed; for example, in Cairns and Rockhampton a certain proportion of the inhabitants have migrated there and possibly had their first attack of rheumatism before reaching the tropical north.

On the other hand, the figures do not bear out the contention that rheumatic fever is unknown in the tropics. Cairns, a city of 13,000 people, in latitude 17° south, had 666 cases of acute rheumatism in eleven years, and four cases of chorea in an area well within the tropics are recorded. On the other hand, chronic rheumatoid arthritis seems much less common in the northern States than acute rheumatism.

The results of the inquiry may be summarized in the statements: (i) Acute rheumatic fever is relatively common in tropical Australia, but the incidence is lower than in the southern temperate areas. (ii) The mortality of rheumatic fever becomes progressively greater as we enter the cooler latitudes, reaching a maximum in southern Australia and New Zealand.

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(3) Leonard Rogers: Report of Ministry of Health, Number 44, 1924, page 26.
(4) Leonard Rogers: *The British Medical Journal*, February 11, 1928, page 219.
(5) J. Tertius Clarke: "Rheumatic Fever and Rheumatoid Arthritis: The Geographical Factor", *The Lancet*, June 5, 1915, page 1169.
(6) J. Tertius Clarke: "The Geographical Distribution of Rheumatic Fever", *Journal of Tropical Medicine and Hygiene*, Volume XXXIII, 1930, page 249.
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Reports of Cases.

CONGENITAL ECTODERMAL DYSPLASIA.[1]

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CONGENITAL anomalies of one or more of the tissues which arise from the embryonic ectoderm are probably relatively common. The tissues involved include the nails, hair, teeth, epidermis, the sweat glands and pilo-sebaceous apparatus, certain portions of the ear and eye, the nervous system and the mucous membranes of the mouth, nasopharynx and anus. A number of references to such anomalies, particularly defects of a single tissue, may be found in the dental and dermatological literature, but combinations of multiple defects of this type seem to be relatively uncommon.

Mackee and Andrews[(1)] have described a group of ectodermal defects associated with congenital absence of the sweat glands. They consider that the following findings are characteristic of this syndrome: absence of the sweat glands and of the pilo-sebaceous apparatus over most of the body, marked dental aplasia, a wide nasal bridge, prominent supraorbital ridges, atrophic rhinitis, thick and protrusive lips, a smooth dry skin, papular lesions of the skin, and heat tolerance. Weech[(2)] was able to find only ten examples of this rare and complete syndrome reported in the literature.

The following case exhibits gross dental aplasia, a wide nasal bridge, thick protrusive lips, a smooth dry skin with some papular lesions, and a partial failure of hair growth. Although there is no disturbance of the sweat glands, it seems that, in view of the presence of the other anomalies, this case might well be regarded as a modification of the complete syndrome described by Mackee and Andrews.[(1)]

Clinical History.

P.H., a girl of eight years, was referred to the out-patient department of the Royal Alexandra Hospital for Children by Dr. John Malcolm, for investigation. She had been

[1] The patient described herein was shown at a meeting of the New South Wales Branch of the British Medical Association on April 11, 1935.

under Dr. Malcolm's care since five years of age, and the condition of her hair and skin had shown a definite improvement in response to thyreoid medication.

There was no history of the same or of a similar condition in other members of the family. There is only one other child in her immediate family, a sister of six years, who is quite well and who does not exhibit any gross ectodermal anomaly. One of her cousins died at eight years of age from *diabetes mellitus*, and another cousin has been mentally deficient since birth, but does not exhibit any obvious defects of hair, nails, skin or teeth.

She was the first child of the marriage; her mother's health was excellent during pregnancy and the labour was a normal one. Her progress and appearance during early infancy were apparently normal and, apart from the failure of the upper central incisors to appear, there was no obvious delay in the eruption of her primary teeth. She suffered from chickenpox and measles during infancy and from a mild attack of diphtheria at seven years of age. There was no history of any severe illness or infection, and her diet appears to have been satisfactory.

Her mother reports that when the child was about two years of age the following anomalies were obvious. Her primary upper central incisor teeth had failed to erupt, her scalp hairs were sparse, short and brittle, her skin was very dry, and its exposed areas were covered with small papules.

Dr. Malcolm informs me that the dryness of her skin and the poor development of the scalp hairs were still obvious at four or five years of age, and that both showed a response to thyreoid medication.

At the present time the most striking feature of the clinical picture is the gross dental aplasia. The alveolar processes of both the maxilla and the mandible are somewhat poorly developed, and apparently only eighteen misshapen teeth have ever erupted, eight in the maxilla and ten in the mandible. The teeth are widely spaced and "gimlet-like" in appearance; there are no upper central incisor teeth and apparently no teeth have ever erupted or will erupt in this position. There is an unduly wide space between the sharply pointed central incisor teeth of the mandible.

An X ray examination of her jaws did not reveal any unerupted central incisor teeth in the upper jaw and demonstrated the complete absence of any unerupted secondary teeth in either the upper or lower jaw.

The hair of her scalp is dry and lustreless, the eyebrow hairs are sparse, particularly over the outer half of each eyebrow, and the eyelashes appear thinner than usual. There is a surprisingly normal growth of fine hair on the forearms and lower parts of the arms.

The skin is dry and there are fine papules over some of the exposed areas. The mother states that the child perspires freely on hot days.

Her nasal bridge is a little widened and her lips, particularly the lower one, suggest "the thick, protrusive and everted lips" which have been described by some observers[1][2] as characteristics of this syndrome. Her nails are possibly a little more brittle than normal, but do not exhibit any gross changes.

There is no obvious defect of her eyes, ears or central nervous system, and the mucous membranes of her mouth, throat and nose are normal in appearance. The Wassermann test, applied to her blood, gave no reaction. Unfortunately her basal metabolic rate has not been estimated.

Discussion.

Some observers have suggested that certain cases of this nature might be confused with Hastings Gilford's progeria or premature senility, but careful examination should make such a mistake most unlikely.

The so-called "neuro-cutaneous syndromes" — von Recklinghausen's neurofibromatosis, Bourneville's tuberous sclerosis (epiloia), angiomatosis of the brain associated with vascular nævi in the region of the fifth nerve distribution—probably result from a disturbance of the ectoblast and might be classified as further examples of congenital ectodermal dysplasia.[3]

Very little seems to be known of the actual ætiology of these conditions; apparently neither syphilis nor infection is causal, and it is improbable that endocrine disturbance is an ætiological factor.

Acknowledgement.

I am indebted to Dr. John Malcolm for his permission to report this case.

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(3) H. Schwarz and H. Abramson: "Neurocutaneous Syndromes in Childhood", *The Journal of Pediatrics*, Volume III, October, 1933, page 586.

A CASE OF MALROTATION OF MIDGUT LOOP WITH SUPERIMPOSED VOLVULUS.

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Clinical History.

A FEMALE child, aged three days, weighing 2·25 kilograms (five pounds), passed meconium soon after birth, but no fæces. It commenced to vomit on the third day, and vomiting became persistent. The abdomen was distended in the upper part, but was soft and flattened in the lower portion.

Operation.—Under general anæsthesia a paramedian incision about 6·25 centimetres (two and a half inches) long, with the umbilicus at its centre, was made, and the whole of the small intestine was delivered. There was a volvulus involving the whole of the small bowel, the diameter of which was only the size of a goose squill. The large bowel was about the size of a lead pencil. The duodenum and first few inches of the jejunum were greatly dilated, being about 5·0 centimetres (two inches) in diameter. The terminal portion of the dilated bowel ended blindly. Beyond this point there was a fibrous band about 2·5 centimetres (one inch) long, then came a section of the bowel about 1·25 centimetres (half an inch) long; after this came another fibrous band and then came the remainder of the small-sized jejunum and ileum. One other section of the ileum for a distance of about five centimetres was also represented by a fibrous cord. The caecum occupied a position just below the pylorus, and the whole of the large bowel occupied a position in the left half of the abdomen. The small intestine was suspended by a very narrow mesentery, which was twisted, thus causing the volvulus. The large bowel was suspended from the middle line by a long mesocolon, but there was no obstruction met with in this portion of the bowel. It was, however, of diminutive size. After the volvulus was untwisted an attempt was made to relieve the condition by a lateral anastomosis between the dilated jejunum and the contracted small bowel, but the infant died twenty-four hours later. The condition described was verified *post mortem*.

Comment.

This condition is the well recognized one of volvulus superimposed on malrotation, ably described by Norman M. Dott in *The British Journal of Surgery* of October, 1923. In this case, however, in addition to the volvulus and, in my opinion, as a result of the volvulus, there were several sections of the bowel which were absent or at any rate only represented by a fibrous band. It would appear as if the volvulus occurred during very early fœtal life, and the portions of the bowel which were undeveloped may have been prevented from developing because of their positions in the twist. Possibly the blood supply is shut off by the

early occurrence of the volvulus. The same factor acting in a lesser degree might account for the lack of development of the whole of the small bowel, although lack of function would also help. Absence of function also would

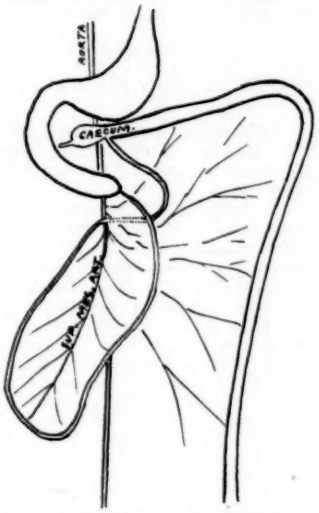

Figure showing position of sections of bowel as seen *post mortem* after untwisting at operation. The duodenum is anterior to the superior mesenteric artery; therefore there is reversed rotation of pre-arterial segment. The caecum is in the subpyloric region, hence there is arrested rotation of the post-arterial segment. The volvulus involved the whole of the small bowel below the distal end of the dilated jejunum.

account for the lack of development of the large bowel. The dilatation of the duodenum and first few inches of the jejunum is accounted for by their being above the obstruction.

Reviews.

CATARACT.

CLAPP, in his monograph, "Cataract: Its Etiology and Treatment", gives a concise review of all recent research on the crystalline lens, paying particular reference to ætiology and pathology.[1] Unfortunately lack of space has prevented the inclusion of details of the most recent work so that students will have to refer to the original articles if these details are needed. In order to facilitate this, Clapp gives an extensive bibliography at the conclusion of each chapter, but it appears that a more detailed work, double its present size, would have met a wider demand amongst English-speaking ophthalmologists, because diseases of the lens, more than any other portion of the eye, daily occupy the attention of oculists throughout the world.

Clapp opens his book with an historical foreword by his chief, W. H. Wilmer, and follows this by two chapters on embryology and comparative anatomy, by Ida C. Mann, F.R.C.S., of London. This collaboration with such an eminent embryologist is most fortunate, but even in these chapters the wealth of detail which we know Miss Mann can so interestingly unfold both by prose and sketch is wanting, and two concise and rather uninspiring chapters result.

Thereafter Clapp takes sole responsibility for the text, and in the succeeding twenty-three chapters takes us through the whole realm of the lens. After discussing the anatomy and physiology, together with the prevailing theories as to lens nutrition, Clapp next confines his attention to congenital cataracts. Succeeding this discussion are three most excellent chapters, namely, VIII, X, XI, on the rarer types of lens opacities resulting from X ray, radium, electrical discharges, ultra-violet and infra-red rays, drugs, endocrine imbalances, vitamin deficiences, nervous diseases and those due to imbalance of the nutrition of the eye. It will here again be seen that much more detailed writing by the author would have been of greater advantage and, further, that much original work still remains to be done on these subjects.

Many will join issue with Clapp in his departure from the orthodox definitions of complicated and secondary cataracts, and there certainly seems no justification for his inclusion under "secondary" of a cataract following *retinitis pigmentosa*, and under "complicated" of a cataract following *retinitis proliferans*. A reversion to the orthodox nomenclature in future editions is strongly advocated.

From these chapters on the rarer cataracts he next turns to senile forms and an enlightening discussion on non-operative treatment is given, showing the futility, except from the psychological aspect, of all local medicinal, radiant and physical therapy. Following this the operative treatment is dealt with and the chapter on the pre-operative preparation of the patient should be read most carefully by all students of ophthalmology. Unfortunately not sufficient stress is laid here on the necessity for taking a forty-eight hours conjunctival culture prior to operation, but perhaps such an expedient is not a routine procedure in America as it is in England.

The next chapters are devoted to couching, needling, combined extraction, simple extraction, intracapsular operations and to capsulotomy. That on couching is out of all proportion to the size of the book, especially as the author admits that it is not to be recommended, while that on intracapsular operation could have been enhanced by more details of the various techniques and especially of the excellent technique of Sinclair, of Edinburgh.

The concluding three chapters deal with the after-care of operation cases, dislocated lens and aphakia, each individually good; but it can be seen here, as throughout the book, that a rearrangement of chapters would simplify the reading of the work.

[1] "Cataract: Its Etiology and Treatment", by C. A. Clapp, M.D., F.A.C.S.; 1934. Philadelphia: Lea and Febiger. Royal 8vo., pp. 265, with illustrations. Price: $4.00 net.

A HAND BOOK ON SURGERY.

"A SHORT PRACTICE OF SURGERY", by Hamilton Bailey and R. J. McNeill Love (1935), is a rapid review of essential facts of surgery.[1] The authors have included many of the latest views and for the more advanced student many helpful facts are included in smaller print. Although the 940 odd pages are full of easily assimilable, well set out descriptions, interspersed with excellent plates and diagrams, yet one is left at the end with the thought that perhaps more space could have been devoted to a little more detail. However, the title, "A Short Practice of Surgery", exonerates the authors from including debatable and problematical views. It is essentially practical. Old, time-honoured dogmas, which are still included in some surgical editions, have been excluded, and the theories of recent years are mentioned and in some cases dismissed in a few lines. For example, the Bendien theory in the diagnosis of malignant disease is mentioned, only for the reader to glean that it is of no use in its present state.

A feature of the book which cannot fail to have an appeal to all is the simplicity and practicability with which the different systems are treated. Suitable plates,

[1] "A Short Practice of Surgery", by H. Bailey, F.R.C.S., and R. J. McN. Love, M.S., F.R.C.S.; Second Edition; 1935. London: H. K. Lewis and Company, Limited. Demy 8vo., pp. 996, with 731 illustrations, of which 83 are coloured. Price: 30s. net.

diagrams and virtually a *précis* of practical points, together with the differential diagnosis, pathology and complications, post-operative and otherwise, of the condition prove sufficiently adequate for most purposes.

Notwithstanding the means of condensation adopted, this book can quite well take its place as one of the most easily readable, assimilable and pleasurable of surgical books from which the surgeon can profit. Especially should it recommend itself to the student preparing for his examinations and to the newly fledged graduate because of its practical application.

The authors are to be congratulated on the production of this book.

HIGH BLOOD PRESSURE.

IN the preface to the third edition of Dr. Halls Dally's "High Blood Pressure: Its Variations and Control" it is stated that the book has been so largely rewritten in so many respects as to constitute a new work.[1] The second edition appeared in 1926 and was reviewed in THE MEDICAL JOURNAL OF AUSTRALIA of April 9, 1927. There does not appear to have been any epoch-making advance in the subject since that time, and from that standpoint the justification for a fresh edition is lacking. However, Dr. Halls Dally's book has been amplified and rearranged to some extent, and it does present a comprehensive review of the subject in the light of present-day knowledge. Yet for the general practitioner it is doubtful if the detailed treatment of the subject, as presented in this book, is really necessary. The ordinary text book on general medicine gives sufficient information for practical purposes.

There is a real danger nowadays that people generally are becoming unduly anxious on the subject of blood pressure. It is a matter of common observation that a patient's symptoms are made worse when he is told that he is "suffering from high blood pressure", and most physicians are careful to avoid the addition of this psychological strain to their patients' troubles.

The physician's most important practical problem in dealing with a patient with high blood pressure is to determine whether the kidney function is normal. The subject is mentioned by Dr. Dally, but it is not strongly enough emphasized by him. The other important feature is cardiac efficiency. If his heart and kidneys are sound, the person with an ordinary degree of raised blood pressure has little to fear.

The various alterations in blood pressure that are compatible with sound health must not be overlooked, and Dr. Dally devotes an interesting chapter to this topic. The effect of psychic stimuli, such as fear, anger, worry, anxiety and pain, in inducing pressure disturbances must always be borne in mind. Under the strain of emotional crises the rise in pressure and the increased heart rate may be great.

Dr. Dally reviews the effects of alcohol and tobacco on blood pressure. He finds no direct evidence to connect alcohol either with the production of hyperpiesia or of arteriosclerosis. (It is to be remembered that high blood pressure and arteriosclerosis are by no means necessarily coincident: in only about 50% of cases of established arteriosclerosis is the arterial pressure found above the normal levels.) Alcohol may induce a temporary rise of blood pressure, but the peripheral vaso-dilatation that follows is accompanied by a fall in pressure. The immediate effect of smoking is a pressor one, although in seasoned smokers practically no rise may occur. Excessive smoking lowers the systolic pressure. Indeed it is said that a systolic pressure of less than 100 millimetres of mercury in an otherwise healthy man is almost certainly the result of excessive smoking. Excessive cigarette smoking often causes cardiac irritability, but for most people the moderate use of tobacco does not appear to be injurious to the circulation.

The sphygmomanometer impresses the patient and its findings may frighten him. It would be well for patients and might be well for physicians if they were not too seriously disturbed on the subject. Observance of the principles of hygienic living is the prophylactic and remedial treatment, for this as for many other of mankind's troubles.

[1] "High Blood Pressure: Its Variations and Control: A Manual for Practitioners", by J. F. Halls Dally, M.A., M.D.; Third Edition; 1934. London: William Heinemann (Medical Books) Limited. Demy 8vo., pp. 300, with illustrations. Price: 15s. net.

INFLAMMATION AND ITS TREATMENT.

IN his book, "Principles in the Treatment of Inflammation", Dr. T. E. Hammond, of Cardiff, elaborates views formulated in his earlier work, "The Constitution and its Reaction in Health".[1]

The book under review deals entirely with the clinical aspects of inflammation, and its complete dissociation from the work of the modern biochemist and bacteriologist often strikes an incongruous note. In its absorption in the doctrine of constitutions and their varying reactions, an era is recalled which most clinicians think has been superseded by a more exact science and practice.

Modifications of the reactions of the constitution to an infection is considered to be the aim in the treatment of inflammations. Five types of reaction are recognized: the acute sthenic, acute asthenic, chronic sthenic and asthenic, and the septicæmic. The recognition of these states is a purely clinical problem and the aid of the laboratory is not invoked to explain the nature or the reason of these varying reactions.

Such extracts as the following indicate the peculiar detachment from modern views on immunity which characterizes the book: "In those whose health is not too good, the inflammation is more likely to be of the asthenic type. This also applies to those who play few games and who are inclined to live a sedentary life. They are more liable to B. coli infection." "While any impairment of the general health is liable to lead to some bacterial disease, the cause is particularly likely to arise if there is loss of sleep, mental anxiety, or overwork. An inflammation that then arises tends to run an acute asthenic course and is liable to end up in septicæmia."

The book contains many case histories illustrating these various reactions, and a perusal of them often results in useful suggestions for treatment. Nevertheless the reader puts the book down with a feeling of disappointment that so much exertion has been expended to such small purpose.

[1] "Principles in the Treatment of Inflammation", by T. E. Hammond, F.R.C.S.; 1934. London: H. K. Lewis. Demy 8vo., pp. 220. Price: 10s. 6d. net.

Notes on Books, Current Journals and New Appliances.

RESEARCH IN ASTHMA.

SIR HUMPHRY ROLLESTON, a vice-president of the Asthma Research Council, has written a "Report on the Work of the Asthma Research Council from 1927 to 1934". The Asthma Research Council was formally constituted in October, 1927, at a meeting attended by medical practitioners, sufferers from asthma, and others. A comprehensive programme of research was drawn up and was approved of by the Ministry of Health and the Medical Research Council. Dr. Arthur F. Hurst is chairman of the honorary medical advisory committee. A large amount of investigation has been carried out, and many papers have been published by research workers of the Asthma Research Council and members of the honorary medical advisory committee; considerable progress has been made. Among the numerous contributions to the literature on asthma and other allergic diseases, the well-known work of H. W. Barber, G. W. Bray and G. H. Oriel may be mentioned. The address of the Asthma Research Council is: Care of King's College, The Strand, London, W.C.2.

The Medical Journal of Australia

SATURDAY, JUNE 8, 1935.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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THE MEDICAL RESEARCH COUNCIL OF GREAT BRITAIN.

THE report of the Medical Research Council of Great Britain for the year 1933-1934, presented to Parliament in January, 1935, is a document full of interest from several points of view. In it the research fathered by the Council during the twelve months is reviewed. This research covers diverse subjects and in many instances the work done in Great Britain has been coordinated with the work of other countries. The investigations already completed and the work in hand show, moreover, the direction which future research must take. Those not engaged in research and those not accustomed to studying its outcome are apt to expect definite results within a certain time—the research worker is called upon, as it were, to justify his existence. The public subscribes money and wants to see something tangible in return for its generosity. Spectacular results are, of course, seldom achieved, many avenues that must be explored end blindly, but forward steps are made. These facts the public should know.

The work of the Medical Research Council for the twelve months was carried out by a grant-in-aid of £139,000 provided by the British Parliament. This amount was the same as that provided during the two previous years, but £9,000 less than the sum provided in the years preceding that. The statement is sometimes made that medical research is expensive. The sum of £139,000 may seem large, but if we take the population of Great Britain to be 46,000,000, we find that the *per capita* expenditure on research is somewhere in the neighbourhood of three farthings a year. One could scarcely claim that the people of Great Britain were being extravagant in their efforts to discover the cause of disease and to eliminate it from their midst. Coming nearer home, no one could with justification say that the Royal Commission on Health in its report in 1925 was making an extravagant suggestion when it proposed that the Commonwealth of Australia should spend £30,000 a year for the working of a research council in Australia. In Great Britain £9,000 of the £139,000 was spent in administration and travelling. The sum of £54,000 was provided for the expenses of the National Institute of Medical Research at Hampstead and of the farm laboratories at Mill Hill. For research grants to scientific workers and for the expenses of their researches at universities and at other centres, for research work in clinical medicine, for various statistical inquiries, and for the investigations of the Industrial Research Board, £76,000 was provided. The grant received by the Medical Research Council was augmented by funds from several other sources, public bodies and private benefactors, but no amounts are stated in the report.

In the account of the activities of the Council prominence is given to clinical research. It will be remembered that for several years the Council has supported a clinical research unit, the Department of Clinical Research at University College Hospital, London. This unit is under the direction of Sir Thomas Lewis. For two years also research has been carried on at the National Hospital for Nervous Diseases, Queen's Square. The post held by Sir Thomas Lewis has been endowed in perpetuity by the Rockefeller Foundation. A new clinical research unit is to be established at Guy's

Hospital, and Dr. Ronald T. Grant has been appointed director. Clinical research has been discussed in these pages on several occasions, and particular reference has been made to the excellent work of Sir Thomas Lewis. The work of the head of such a unit would be somewhat similar to that of a full-time professor who was head of his department. An officer of a clinical research department would be much more in the public eye than a laboratory worker; it would be possible to see whether he was making an attempt to justify his existence. For such appointments a tenure of office for a stated period with the possibility of renewal is salutary; we may take it that laziness or inefficiency would be a bar to reappointment.

Another feature of the report is the extent of biochemical investigations that have been and are being made. The chemical problems of bacteriology and the chemical transmission of nervous effects are subjects to which much attention has been paid. Without doubt much more chemical research will be undertaken in the future; and in this connexion it is important to note that the determination of biological standards and the methods of biological assay and measurement have received special attention. The standardization of various preparations has been largely the work of the Health Organization of the League of Nations and the standards have been distributed for this body by the National Institute for Medical Research. This subject is so large that it calls for special discussion.

It has been possible on this occasion to do little more than mention some of the aspects of this report. Every research worker and every medical practitioner interested in research should read it; further, we should like to see some account of it served up in popular fashion for the laity.

Current Comment.

THE EFFECT OF SNAKE VENOM IN HÆMORRHAGIC STATES.

THE effect of snake venom has been the basis of a good deal of experimental work in several directions. We are not here concerned with the observations made on its toxicity, but with those made on properties that might fit it for clinical use. Its relation to severe disturbances of the coagulation mechanism have led to suggestions that it might prove of service in hæmorrhagic states, and numbers of papers have been written by Samuel M. Peck on the subject of such clinical applications. He has made another recent contribution in collaboration with Nathan Rosenthal, and gives the results of a number of clinical observations.[1] Schwartzman had previously demonstrated that local hæmorrhagic necrosis could be produced in animals by intradermal injections of bacterial filtrates followed later by intravenous injections. Peck found that rabbits could be rendered refractory to this manœuvre by giving them injections of snake venom two to four weeks previously, and it is on the basis of this experimental work that the clinical trials have been made. As no antibodies could be demonstrated in the serum of the animals, it was concluded that either the blood or the vessel walls underwent change. The explanation seems yet to be obscure, and though the authors assume in the present instance that it is the changes in the walls of the blood vessels that are responsible, more work is necessary in order to clear up that point. Only certain venoms had been found effective in the experiments, and as the venom of the moccasin (*Ancistrodon piscivorus*) was found to be particularly active in this regard, it was used as the standard preparation. Antivenin had not been found to inhibit the Schwartzman phenomenon in animals and proved inactive in treatment in the author's hands. The venom was used in a 1 in 3,000 solution in physiological saline solution with a small quantity of antiseptic added; it was administered by subcutaneous injection in doses rising from 0·4 to 1·0 cubic centimetre for adults, the doses being given twice a week on the average over a period of several months. The reactions experienced by the patients were not as a rule severe. Usually there was some degree of ecchymosis at the site of puncture, but this occurred only in persons suffering from some hæmorrhagic state, and after several injections this local bleeding was no longer seen. The disappearance of the local ecchymotic reaction was taken as an evidence of clinical improvement; and in one case where no amelioration of the general symptoms was observed the same local reaction was found to remain unchanged, even after a year of treatment.

The patients submitted to therapeutic trial were suffering from diverse conditions. These included uterine bleedings of an indeterminate nature, classified as functional; purpura of toxic or allergic type; epistaxis of obscure origin, hæmoptysis from bronchiectasis; hæmophilia; bleeding hereditary telangiectases; and thrombocytopenic purpura. The results varied. In the last-named group a response to the treatment was seen in the majority of cases, and nearly half of the patients are described as having completely recovered, though the authors

[1] *The Journal of the American Medical Association*, March 30, 1935.

admit that spontaneous remissions are known to occur in this condition. Some patients, however, remained completely unchanged after prolonged treatment by venom. Hæmophilia was apparently untouched by this method; for the usual periodic accidents occurred in spite of all that was done. In the hæmorrhagic states in which no changes are found in the blood, such as the functional bleedings from the uterus and the nasal mucosa, definite improvement was reported. There seems to be a tendency for the bleedings to recur in some cases after treatment has been stopped; and this makes it difficult to evaluate the results. Perhaps the most conclusive group is that of the uterine bleedings, for here there is some semblance of a control available in the regular recurrence of the menstrual periods.

The Council on Pharmacy and Chemistry of the American Medical Association has made a report on the use of snake venom in the same issue of the journal as that containing the original paper, and the conclusion arrived at is that the present status of this particular snake venom product (prepared by one of the large manufacturing firms of chemists) is promising. The council regards the results as somewhat inconclusive, and suggests that further opinion be reserved until fuller evidence of the effects of the product in hæmorrhagic states is available. Caution in the use of the product and care in the selection of cases for trial are also advised. One rather uncomfortable side effect of the treatment is in the production of sensitiveness to the venom in many of the cases. This did no more than produce an intense local reaction; but the authors admit that they did not press the doses when this stage was reached, but desensitized the patient by small repeated doses. Attempts made to influence the hæmorrhagic states are of distinct importance, ranging as they do from the employment of the female sex hormones to the use of the poison of one of the natural enemies of man. Further work on this subject will be followed with interest.

THE TREATMENT OF SPIDER BITE.

RECENT work on the value of antisera in the treatment of spider bite has been commented on in these columns, and it is worth while drawing attention to another suggestion that appears to have borne fruit in America. This is the intravenous or intramuscular administration of calcium salts. *Latrodectus mactans*, the spider in question, is the "black widow" spider of the United States, and belongs to the same family as our own *Latrodectus hasseltii*. Since it is believed that the venom acts upon the nerve endings or the myo-neural junctions, and since it is the severe pain that is one of the outstanding symptoms of the poisoning in man, it would seem logical to attempt to find some remedy which would depress these structures. Elmer W. Gilbert and Charles M. Stewart have attacked the problem from this angle and have tried calcium salts because of their effect in depressing the function of muscle and nerve.[1] Calcium chloride proved to be remarkably effective in relieving the pain, and the relief was not only rapid, but lasting. The muscle spasm noticed in the subjects of spider bite was also relaxed immediately. Fortunately they found that the solution of calcium gluconate was just as effective, for this salt is not so necrotizing in its action on the tissues as the chloride, which must be injected very cautiously into the circulation, lest any be spilt into the subcutaneous structures. Reports of five cases are appended, and from these it would seem that a most valuable form of treatment has been found. Calcium gluconate has the advantage of being suitable for intramuscular as well as intravenous injection, which makes it all the more suitable for an emergency, and in particular for use in the case of children. The intramuscular route seemed to be slightly less rapid, as one would expect, but was quite satisfactory in this series. Oral medication with calcium was tried, but is dismissed as futile by Gilbert and Stewart, though it seemed to relieve pain on one occasion. In one case the serum calcium content was estimated; but this was within normal limits. This is hardly relevant, however; for clinically calcium often produces definite results even though the total serum calcium is not found to be reduced. This form of treatment is worth recommending. Though only a few clinical trials have been made as yet, and confirmation is at present lacking, it is so simple and harmless a method that it would be well if Australian practitioners of medicine gave it a trial. Bites by red-backed spiders are not very uncommon, and reports of cases following this treatment would be welcome.

THE SCHÜLLER-CHRISTIAN SYNDROME.

THE complete Schüller-Christian syndrome, or lipoid granulomatosis, consists of defects in the bones (observed radiographically), exophthalmos and *diabetes insipidus*. It is a progressive disease, confined almost entirely to childhood. Affected persons seldom reach adult life. Frank L. Horsfall, Junior, and W. Russell Smith have recently recorded a case in which careful investigations were made.[2] Their patient was a boy who first manifested symptoms of *diabetes insipidus* at the age of three months. His development otherwise was normal until the age of two years. He died when five years old. *Post mortem*, lipoid granulomata were found widely scattered through bones and other tissues and many organs; their presence in the orbit accounted for the exophthalmos. As cholesterol contributes largely to the lipoid content of the lesions, Horsfall and Smith suggest that "cholesterol granulomatosis" is a more exact term than "lipoid granulomatosis"; the term "xanthomatosis" they regard as inaccurate.

Horsfall and Smith have made a careful study of their case and have contributed something to the knowledge of this rare and interesting disease.

[1] *The American Journal of the Medical Sciences*, April, 1935.
[2] *The Quarterly Journal of Medicine*, January, 1935.

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

Iridocapsulectomy.

B. RONES (*Archives of Ophthalmology*, June, 1934) describes Wilmer's operation to form a pupil in total occlusion, which has yielded excellent results. A large conjunctival flap is turned down from above, and at each corner a suture is passed through the lips of the incision, but not tied. The tip of an Agnew spade knife is inserted at the limbus and carried into the anterior chamber for several millimetres. The knife is then plunged downwards through the iris tissue into the vitreous so that the resulting incision is the width of the knife, namely, five millimetres. The knife is withdrawn and de Wecker's scissors introduced with one blade behind and the other in front of the iris. A cut is made downwards and inwards from the temporal edge. The scissors are then carried over to the inner edge and another cut made down and out to complete the triangle. The central portion of the iris is removed by the scissors and the conjunctival sutures tied. Speed is essential.

Cataract Extraction with Posterior Capsulotomy.

D. T. ATKINSON (*American Journal of Ophthalmology*, June, 1934) refers to the poor vision so often obtained after cataract extraction, owing to the opaque membrane formed upon the posterior capsule. This, he believes, can be avoided by the routine practice of dividing the posterior capsule at the conclusion of the first operation. He makes a corneal incision with no conjunctival flap, always performs iridectomy, and does not use sutures. He washes out the anterior chamber when necessary. To open the posterior capsule, the speculum is removed, the upper lid is elevated with the thumb, and a quick stab is made in the centre of the capsule with a von Graefe knife introduced on the flat into the anterior chamber. The eye is immediately closed. This procedure the author considers safer and more effective than intracapsular extraction.

Irradiation Cataract.

J. G. MILNER (*The British Journal of Ophthalmology*, September, 1934) gives an account of cataract following the use of X rays and radium. His description is derived from an analysis of 36 cases. The cataract has a typical appearance, due to the formation of vacuoles, cloudy areas and later a plaque. It has a constant situation—the posterior cortex of the lens. There is always a latent period of about two years. The cause may be a disturbance of the nutrition of the lens or, more likely, damage to the capillaries of the ciliary body. The dosage was variable. Even one course of deep X ray therapy in the head region is sufficient to produce cataract. As to radium, as small a dose as 624 milligramme-hours produced a cataract. The good results seen for rodent ulcers about the eye were obtained by using unscreened radium, the effective rays being of the β variety. The surgeon should be guided by the knowledge that β radiation is effective and safe to the lens, and he should use this form of radium therapy, if practicable, in preference to γ rays. It is to be hoped that a method of applying X rays will be evolved in which both eyes will be protected.

Scotoma Produced by Pilocarpine.

J. A. VAN HEUVEN (*The British Journal of Ophthalmology*, September, 1934) observed that some patients suffered from a reduction of vision after the instillation of a drop of 2% pilocarpine solution. He formerly ascribed this to lenticular opacities, but discovered that it occurred in patients with perfectly clear lenses. The loss of vision began a quarter of an hour after the dose and did not return to normal for about two hours. In the course of eighteen months the author found four typical cases which showed objectively a relative central scotoma after the instillation of pilocarpine. The patients were studied with Scheerer's entoscope, an instrument that measures Maxwell's spot—the central zone of the retina, in which no blood stream is seen. In all these patients there was a slowing down of the blood stream and an enlargement of Maxwell's spot. This supplementary action of pilocarpine can be prevented in two ways: by administering 0·0005 gramme of *Solutio Nitroglycerini* by mouth three times a day; also by adding cocaine to the solution of pilocarpine. A good combination is a solution containing 1% of pilocarpine hydrochloride, 0·3% of eserine hydrochloride, and 0·5% of cocaine hydrochloride.

Treatment of Pulsating Exophthalmos.

G. M. DORRANCE AND P. E. LOUDENSLAGER (*American Journal of Ophthalmology*, December, 1934) agree that the term "pulsating exophthalmos" should be restricted to a condition in which there is an arterio-venous communication between the internal carotid and the cavernous sinus. Their report consists of an analysis of 275 cases, of which 55 developed spontaneously and 220 after trauma. Of 89 patients treated non-surgically, that is, by medicine, carotid compression, gelatin injections or rest, 23 were cured and 3 died. The authors are not impressed with their efficacy. Of 35 treated by orbital vein ligations, 12 were cured and 6 died. The operation is condemned. In 69 patients the internal carotid was ligated, resulting in cure in 36 cases, improvement in 15. In 82 the common carotid was ligated, with 43 cured and 12 improved. More complications followed ligature of the internal carotid than ligature of the common carotid, notably hemiplegia. One death was common to both, which is evidence that there is small danger from death by anæmia of the brain. The arterio-venous aneurysm itself is a stimulant to the development of collateral channels. The authors give physiological reasons for preferring ligature of the common carotid. It reduces the blood flow in the internal carotid by about 50%. If ligation of the common carotid is not sufficient, or if the symptoms recur, the authors then ligate the superior thyreoid and the occipital arteries. The common carotid should be ligated early; previous compression of the carotid vessels is inadvisable, as it may lead to post-operative complications.

Meningiomata of the Sphenoid Ridge.

C. A. ELSBERG AND C. G. DYKE (*Archives of Ophthalmology*, November, 1934) report cases illustrating a syndrome consisting of primary atrophy of the optic nerve, with bitemporal defects of the visual fields and progressive loss of vision. It is often the first and, for a long time, the only evidence of a mid-line growth beneath the frontal lobes of the brain, such as a meningioma. The *sella turcica* may be normal. The first case was that of a woman of thirty-seven years. Besides the classical signs, X ray examination of the skull showed a slight degree of atrophy of the clinoid processes. Encephalography demonstrated a flattening of the *cisterna interpeduncularis* with concavity upwards. "The findings are suggestive of a meningioma arising from the *tuberculum sellæ*." Operation revealed a small neoplasm attached to the most medial part of the sphenoid ridge. The result was good. Three other cases are reported. Emphasis is placed upon the importance of the shape of the basal cisterns as shown by encephalography.

Thyroxin.

P. C. JAMESON (*Archives of Ophthalmology*, November, 1934) reports upon the use of thyroxin in ophthalmology. Tadpoles fed on meat develop hind-legs in 53 days, forelegs in 73, and undergo complete metamorphosis in 104. When they are fed on thyreoid extract or thyreoid extract suspended in the water, the corresponding times are 9, 11, 20 days. However, they are pigmies and survive only a few days. The dosage and administration of thyroxin presented difficulty. The natural crystal is unstable. It is soluble only in sodium hydroxide, which in improper solution is irritant or escharotic to the eye. Thyroxin can be used in solutions up to ten milligrammes in two cubic centimetres, provided the sodium hydroxide is not more than 0·03 mil (half a minim) to the cubic centimetre. It is an expensive drug; a synthetic product is on trial, used as eye drops. A medical practitioner used this remedy for increasing lenticular opacities with attacks of ocular hyper-

tension and found great relief. It has been used for vitreous opacities, keratitis and corneal nebulæ.

Sub-Conjunctival Iron Deposits after Adrenaline Injections.

T. GUNDERSON (*American Journal of Ophthalmology*, September, 1934) explains that the deposits of iron seen at the site of a sub-conjunctival injection of adrenaline is due to the dissolution of metallic iron by this drug. Adrenaline is acid in reaction and is a strong reducing agent. It will precipitate heavy metals like gold or platinum on the cornea in tattooing operations. The effect is very slight if new chrome steel needles are used or, better still, gold or platinum. The adrenaline should come in contact with the needle for as short a time as possible. Pledgets soaked in adrenaline solution and kept under the lid for a few minutes have practically the same mydriatic effect as injections.

OTO-RHINO-LARYNGOLOGY.

The Diagnosis and Treatment of Abscess of the Brain.

SYDNEY SCOTT (*The Journal of Laryngology and Otology*, February, 1935), in a paper dealing with the diagnosis and treatment of abscess of the brain, gives the history of the treatment of brain abscess of otitic origin. He discusses the differential diagnosis between brain abscess and cerebellar abscess, and describes the different clinical groups as well as the operative methods applicable to each. When operating for abscess of the brain secondary to middle ear disease, the first step has been to explore the mastoid and perform Schwartze's operation. It is unnecessary to perform the radical mastoid operation as a routine, and only when it is known that the labyrinth is defunct, or the disease in the middle ear is very chronic, or cholesteatoma is found, does one proceed immediately to remove the tympanic ossicles and posterior meatal wall. The next stage comprises exposure of the *dura mater*, in the removal of the roof and posterior wall of the mastoid operation cavity. In the case of cerebral abscess the tegmen and the lateral wall of the middle cranial fossa are removed, working from below upwards with bone-cutting forceps. In the case of cerebellar abscess, the *dura mater* is exposed beyond and below the sigmoid sinus to the cerebellar fossa of the occipital bone. On the inner side of the sigmoid sinus Trautmann's area is often the pathway of infection from the antrum to the cerebellum. To attain this cranial exposure a vertical incision of the scalp, temporal muscle and pericranium is made from the upper end of the original mastoid incision, and a horizontal incision is made in the plane of the Frankfort line (infraorbital-suprameatal level) to expose the cerebellar fossa. The trephine is unnecessary; for as soon as the *dura mater* is sufficiently exposed with a broad, flat gouge, the opening can be quickly enlarged with double lever bone-cutting forceps, even as far as the *foramen magnum* if necessary. The *dura mater* is incised at the apparent seat of invasion, whenever this can be determined; for this is more likely to lead directly into the brain abscess. Failing any definite guide, and when the diagnosis of cerebellar abscess is well founded, preference is given to an opening posterior to the sigmoid sinus, especially when this occupies a forward position. A thin-walled abscess can easily be detected by the escape of pus, when special brain-exploring forceps are introduced and opened. With the same instrument the resistance of a thick-walled abscess can be felt. The author is of the opinion that, when possible, it is important to empty the abscess thoroughly in the first instance, and better to use a suction apparatus than to attempt to irrigate the cavity. It is necessary to avoid force. Drainage tubes should be attached to the pericranium or *dura mater* so that they remain in the same desired position, even if there are subsequent swellings and œdema of the scalp. The wound is only partially closed; when it has been possible to enucleate the abscess, it is almost completely closed by suture. In describing the after-treatment, the author stresses the importance of doing as little as possible to the wound or tubes during the first five or six days, the most critical period, following the discovery and emptying of the abscess.

Hay Fever in Japan.

H. J. HARA (*Archives of Otolaryngology*, January, 1935), in a second communication dealing with hay fever among the Japanese, points out that in a previous communication it is stated that hay fever is unknown in Japan; that scores of patients, when they return to their native land, are free from symptoms during their stay in Japan, and that the symptoms invariably reappear a year or two after their return to America. It was also noted that there was no marked change in the dietary habits of the patients in either country. He states that the pollens that are concerned in the production of hay fever must be wind-borne. To a considerable extent the air motion determines the pollen content of the air. It has been repeatedly found that light, buoyant pollens may be carried many miles by air currents. There are several factors in air motion that influence the pollen content. Daily periodicity, altitude, seasonal variation, and direction of the wind, in some regions, are all important. When a large body of water is near by, or a strip of land is surrounded by ocean, as in the case of Japan, the wind blowing from the water carries less pollen than that blowing from the land. The velocity of the wind must be the final recorded vital factor. Other things being equal, the greater the speed of air motion, the greater increase there is in the number of pollens in the air that are capable of reaching and irritating the nasal mucosa. In the light of clinical experience the author considers that Japanese pollens are non-irritating. It has long been recognized that pine pollen is universally present in extraordinarily large quantities and is extremely buoyant, yet it does not seem to cause hay fever. Pollens that are usually considered exciting agents of hay fever in America were not found on the slides from Japan, or at least were found in insignificant numbers. Plants usually considered excitants of hay fever in America are not totally lacking in Japan; but they appear to be negligible from an allergic standpoint. Herein lies the solution of the problem. The author remarks that the concentration of pollen in the air in Japan is much higher than that in Los Angeles. Practically all Japanese pollens are large, heavy and non-spiculated. The high humidity, abundant rain, and other meteorological conditions in Japan appear to prevent the dissemination of light, buoyant pollens, which are those usually considered to be excitants of hay fever. A low concentration of irritating pollens in the air is more productive of hay fever than is a higher concentration of non-irritating pollens.

Incidence of Allergy in Rhinological Practice.

HARRY L. BAUM (*Archives of Otolaryngology*, December, 1934), in discussing the incidence of allergy, remarks that in the normal course of rhinological practice approximately 27·3% of all patients with nasal complaints may be expected to exhibit some form of allergy in the nose, and of these about 89% will show allergic changes in the sinus mucosa. A better understanding of allergic nasal and sinus disease on the part of rhinologists will prevent frequent errors in the diagnosis of suspected focal infection. A realization of the true relation of nasal and sinus allergy to other allergic manifestations throughout the body will enable the rhinologist to avoid many useless and damaging operations, with destruction of innocent and valuable tissue, under the mistaken assumption that dangerous foci of infection are being removed. Surgical intervention is definitely contraindicated as a primary method of treatment in the nasal manifestations of allergy, although it has a limited field. Briefly, the limits restrict surgical intervention to the removal of obstructive allergic œdema and hyperplasia, as polypi and polypoid hypertrophy of the turbinates, the drainage of secondarily infected sinuses, and the removal of mucosa that has become the seat of suppurative disease. Finally, the author states that in his experience focal infection from the nose and sinuses is exceedingly rare, and nasal and sinus allergy exceedingly common.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Medical Society Hall on May 1, 1935.

Lung Abscess.

DR. CLIVE FITTS read a paper entitled: "Lung Abscess", illustrated by lantern slides (see page 701).

DR. W. S. NEWTON expressed his appreciation of the excellent paper and congratulated Dr. Fitts on the comprehensive manner in which he had dealt with such a wide subject. He expressed the opinion that a great percentage of lung abscesses were due to the inhalation of foreign bodies, if under this heading material inhaled at operations on the nose and throat was included. It might be supposed that the entry of a foreign body to a bronchus could not escape notice; but this was by no means the case. He was doubtful of the frequency of the embolic type of ætiological factor, especially when lung abscess followed an abdominal operation. Perhaps such an abscess was due to the occlusion of a bronchus, followed by atelectasis and subsequent sepsis. He should like to hear Dr. Turnbull's views on this point, as he recalled the close interest in the subject displayed in Dr. Turnbull's paper on post-operative lung complications. With reference to the use of lipiodol in the investigation of lung abscess, Dr. Newton stated that he liked the method employed by Dr. Blaubaum, in which the lipiodol was introduced through the bronchoscope and was seen to pass the swollen mucosa because of the preliminary careful aspiration. He was interested in Dr. Fitts's remarks about the rapidity with which clubbing of the fingers occurred, because in one case he had noted the appearance of this sign within three weeks, and he had had experience also of the rapid disappearance of clubbing.

Dr. Newton referred to the advantages to be gained by the combined services of a physician, a surgeon, a bronchoscopist and a radiologist in the investigation and treatment of these patients. He thought that post-operative pulmonary complications demanded an immediate investigation and that by the timely use of the bronchoscope many patients would be saved from the development of this distressing and serious complaint. He regretted that Dr. Fitts had said so little about bronchoscopic treatment; but, as Dr. Fitts had referred mainly to his experience at the Brompton Hospital, perhaps the explanation was associated with the recent remark of one of the physicians of that hospital that the use of the bronchoscope was still unfortunately neglected in England.

Dr. Newton's experience of the results of thoracotomy were very disappointing. Though he conceded that in certain selected cases this operation might save life, he could not conceive of the procedure's causing the disappearance of a thick-walled cavity. He should suggest that if postural drainage with or without bronchoscopic aspiration would suffice to keep the cavity clear without the recurrence of symptoms, the medical attendant should be content. If symptoms recurred, then lobectomy would offer the best results. Dr. Fitts had described the two-stage operation and the use of the wound pack; Dr. Newton would be interested in the opinions of local surgeons of the special method of Dr. Bethune, of Montreal, for the formation of adhesions by the use of packing and talcum powder.

DR. LEO DOYLE confined his remarks to the surgical aspect of lung abscess. He mentioned that by bronchoscopy a foreign body could be removed, and in many cases no further active treatment was required. When the association of lung abscess with carcinoma was suspected, bronchoscopic verification should be sought and biopsy material obtained; but he mentioned that failure to find histological evidence did not necessarily exclude carcinoma. He did not want patients to be sent to him in the early stages of abscess formation, because of the undesirability of attempting to establish drainage in a very sick patient while the condition that Dr. Fitts had so aptly compared with a carbuncle was present. With reference to the two-stage operation, one difficulty at times was the interval that should be allowed to elapse for the formation of adhesions. Sometimes the surgeon felt that death might supervene before the ideal time for the completion of the operation, and he might have to embark on the extremely risky attempt to induce the formation of adhesions by suture. It must be remembered that, owing to the rigidity of the thoracic wall, cavitation would be permanent unless there was surgical intervention. There were four alternatives to face: (i) avoid surgery and teach the patient to keep the cavity empty; (ii) provide external drainage; (iii) decrease the size of the hemithorax; (iv) remove the affected lobe. Dr. Doyle felt sure that if ever he had the misfortune to get a deeply placed non-tuberculous cavity in his lung he would elect to take his chances with it. Should, however, the cavity be superficial or in the middle of a lobe, then he would think about surgical intervention. In the event of a secondary hæmorrhage of a severe degree, an attempt should be made to close the cavity or remove the lobe.

With reference to the two-stage drainage operation, Dr. Doyle stated that, though it was usual to remove the ribs first and pack off the pleura afterwards, he favoured the reversal of this order. He pointed out that if the ribs were left and the packing down under them, the patient would still have something left to cough against, which would help him to keep the cavity empty until it could be evacuated.

Several instances of successful lobectomy for abscess complicating carcinoma had been reported, and Dr. Doyle felt that this operation was a reasonable project under circumstances where consideration of operative mortality need not be taken into account; but where simple and less shocking operations had a fair chance of succeeding, he would prefer them to lobectomy.

An oxygen tent was very useful in the post-operative treatment of thoracoplasty; but unfortunately most patients wanted it removed. On this account Dr. Doyle thought that the patient should be allowed to become accustomed to the oxygen tent before operation, and when this pre-operative drill had been carried out he had found that the patients derived comfort and benefit from its use after operation.

He should like to hear some discussion about the choice of anæsthesia for these severe chest operations. He preferred local anæsthesia by means of a nerve block when the abscess was to be opened, and endotracheal gas and oxygen administration for thoracoplasty or lobectomy. The catheter should fit snugly, so that, if necessary, the lung could be inflated.

DR. ATHOL BLAUBAUM confined his remarks to the use of the bronchoscope in the investigation and treatment of lung abscesses. He stated that successful removal of a foreign body did not preclude the possibility of the subsequent development of lung abscess. It was wise to aspirate many times in some cases after the foreign body had been removed, at intervals of three or four days. Bronchoscopic treatment facilitated drainage in the tracheobronchial tree; but the site of the lesion was very important. The bronchoscope was of no use in peripheral or in upper lobe abscesses. It was true that there was an attachment for the instrument, which was named the "round-the-corner aspirator"; but this was of limited assistance only, as it could not be used under the guidance of vision. It was in lower lobe abscesses that the bronchoscope was most useful. There were a number of contra-indications to its use. It should not be used after recent severe hæmorrhage, in moribund patients, in the presence of advanced cardiac disease or aneurysm, or when there was a concomitant cerebral abscess. The time factor was another important consideration. He attributed to Chevalier Jackson the statement that the barrier formed in the wall of the abscess by the third, fourth or fifth week. Dr. Blaubaum then described the actual procedure adopted by him when using a bronchoscope in a patient with lung abscess. It was important that the broncho-

scopist should have a skilled assistant and a specially trained theatre staff. After mild premedication of the patient, local anæsthesia was used for the introduction of the bronchoscope as far as the carina, when a pause was made and local anæsthesia carefully induced to prevent reflex cough. As the instrument was advanced and the affected area approached, the mucosa became reddened and congested. The subbronchus was always closed and blocked with œdema; pus could be seen trickling from the pouting entrance. At this stage he again employed local anæsthesia, this time with cocaine and adrenaline solution, and used dilating forceps. The granulation tissue in the tube had to be ironed out with suitable bougies, and an aspirator pushed on into the cavity, which was then sucked clean. No irrigations were needed, and the procedure need not occupy more than about ten minutes. Next day the patient would feel much better, and, further, similar treatment would be undertaken once or twice a week in conjunction with treatment by the physician in charge. It was usual finally to introduce lipiodol into the cavity when it became dry.

Chronic lung abscesses were treated in a similar manner; but they did not clear up, though the patients were much improved and might expect to return to work in about three years. The lining of the cavity would epithelialize and would not cicatrize.

DR. HUME TURNBULL said that, like the previous speakers, he had found the paper very interesting. The mention of non-metallic foreign bodies as likely causes of lung abscesses reminded him of a patient who dated his symptoms to a sudden onset at a moment when he had been driving fast in an open motor car. In this case no actual foreign body had been discovered; but the history was very suggestive. Dr. Turnbull said that he was unable to follow the reasoning of those who postulated pulmonary emboli as ætiological factors in these cases; for when emboli occurred, hundreds of them cleared up without suppurating. He believed that in 99% of cases lung abscesses were atelectatic in origin and had filthy mucous membranes from which the suppuration arose. Investigation was difficult in private practice as compared with hospital practice, but he felt that any local consolidation in the lung that did not clear up reasonably promptly and completely should be investigated. X ray investigation and the proper use of the bronchoscope were admittedly beyond the reach of practitioners at times; but he did expect general practitioners to suspect and so initiate the necessary investigation. Postural drainage must be carried out efficiently; but he had not seen it explained adequately in print. The site of the abscess required careful and complete localization before postural drainage could be applied intelligently.

Dr. Fitts's remarks about the use of emetine periodide and "Yatren" had interested him, but he thought that these substances were very disagreeable, and if one really wished to give anti-amœbic treatment, the use of emetine intramuscularly was preferable.

Dr. Turnbull went on to say that whenever he had a patient with suppurative pneumonitis, he would treat him with kindness and at a distance for some weeks. When the process was fixed or had become chronic, and epithelialization was in progress, the problem became a purely surgical one. The physician would like that abscess cavity obliterated. The decision was for the surgeon. The technique was improving rapidly, and he must decide what was the risk and what could be done.

DR. W. J. NEWING said that in his experience the two-stage thoracotomy operation was not always satisfactory for chronic lung abscesses, and the choice lay between lobectomy and drainage by cautery. Professor Graham had reported a large number of successes by the use of the cautery. He would take three to six months to burn out an abscess. Lately Graham appeared to have swung over to lobectomy; but probably this was because of the length of time in hospital the cautery method entailed. These cases were suited better for treatment at a special chest hospital than at a general hospital. Dr. Newing understood that arsenical treatment was worth giving in non-specific cases, to remove fœtor from the breath. The large spirochætes and cigar-shaped organisms instrumental in the production of fœtor would be killed off by this means. He, too, had noted the sudden disappearance of the clubbing of fingers as a lung abscess became dry.

DR. J. F. MACKEDDIE was strongly of the opinion that lipiodol should be introduced every time through a bronchoscope. He recalled Chevalier Jackson's term, "lung toilette", and, as this performance was now child's play to an experienced specialist such as Dr. Blaubaum, it should be utilized on the slightest suspicion after operations on the upper respiratory regions.

DR. SYDNEY PERN advocated the use of the new ultra-short-wave diathermy machine, which was of unquestionable value in chronic lung infections. By its use it was possible to kill out infections rapidly. He had known a big carbuncle to vanish in four days. He had found that the machine was simple and harmless; he invited members to give it a trial.

DR. LESLIE HURLEY asked for information concerning the advantages of early operation and drainage of pulmonary abscesses. He had had five patients who had recovered clinically and radiologically after medical treatment, within six to eight weeks; but five cases, in which the abscesses had become chronic, had all ended unsatisfactorily.

DR. GEORGE FOREMAN thought that lobectomy was ideal for selected examples of chronic pulmonary abscess. He had seen two successful cases and attributed the successes to the use of a second tourniquet to control hæmorrhage.

DR. LEIGH WEDLICK, referring to ultra-short-wave therapy, thought that the claims that had been made for this method had been somewhat exaggerated. He instanced one bad reaction after an overdose, and stated that there was no way of estimating the dosage from the machine. Apart from this risk he agreed that it was well worth a trial.

DR. ERIC COOPER asked for information about the latent period of a week or ten days that occurred after operation and before the sudden development of a patch that rapidly became the site of a pulmonary abscess.

DR. CLIVE FITTS, in reply, said that he concurred with the view that it was best to introduce lipiodol through a bronchoscope. At the Brompton Hospital about 90% of the introductions of lipiodol were done through the cricothyreoid membrane, and the whole operation, including the X ray examination, took only ten minutes. He thought that the use of the bronchoscope had been neglected. A routine estimation of hæmoglobin was advisable before operation, and a transfusion of blood should be made if required. Nelson's article in *The British Medical Journal* in 1934 was the best one he had seen on postural drainage. In reply to Dr. Hurley, he said that the earliest surgical opening, in his experience, had been made at the end of the fourth week, and it had not been particularly successful.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Melbourne Hospital on May 15, 1935. The meeting took the form of a series of clinical demonstrations by the members of the honorary staff.

Disseminated Sclerosis with Optic Atrophy.

DR. LEONARD MITCHELL showed a male patient, aged twenty-two years, who had had a sudden failure of vision in the right eye about five months previously. The peripheral vision had improved; but the central vision had not returned. Two weeks before the meeting he had an attack of tremor with headache and vomiting. The only abnormal nervous signs were an exaggerated right knee jerk and absence of the superficial reflex on the left side of the abdomen. There was a very well defined physiological cupping of the left optic disk; the right disk presented the appearances of optic atrophy. The left field of vision was normal; but the presence of a central scotoma in the right field with a normal periphery was demonstrated by Dr. Mitchell.

Arteriosclerosis with Uræmia.

DR. MITCHELL also showed a patient, aged thirty-nine years, who had been admitted to hospital first with symptomatic purpura and irregular vomiting. The systolic blood pressure was recorded as 230 millimetres and the diastolic as 110 millimetres of mercury. The patient was readmitted early in May, 1935, in a state of uræmic coma, with a systolic blood pressure of 190 millimetres and diastolic pressure of 150 millimetres of mercury. Albumin was present in the urine, and on microscopic investigation the presence of granular casts was established. There were 147 milligrammes of urea per 100 cubic centimetres of blood. On May 14 the fundi were reported to show arteriosclerotic nipping and congestion of the veins, flame-shaped hæmorrhages and patchy retinal œdema of hard exudate. No woolly patches could be seen. There was toxic papillœdema of the left optic disk.

Carcinoma of the Lung.

DR. E. HUGHES-JONES showed a man, aged fifty-four years, upon whom he had performed lobectomy, under gas and oxygen anæsthesia, following artificial pneumothorax. After an illness of eight months' duration, in which he had had sharp pain in the right side of the chest associated with dyspnœa, whitish sputum, shivers and sweats, and the loss of more than 4·5 kilograms (ten pounds) in weight, bronchoscopic examination had led to the diagnosis of bronchogenic carcinoma of the oat-cell type. There was a moderate amount of dyspnœa for three days after operation, a small amount of tenacious sputum being coughed up with difficulty; closed drainage yielded 240 cubic centimetres (thirty ounces) during the first day and very little thereafter. Radioscopic examination four days after operation showed that the heart and trachea had been pulled over to the right and that there was a thin film of blood in the pleural cavity. Though there was a swinging temperature for some days, no pus could be located in the chest. Following suppuration in the wound, convalescence was uneventful.

Renal Sympathectomy.

Dr. Hughes-Jones also showed two female patients upon whom he had performed renal sympathectomy for the relief of renal colic. In one instance a woman of twenty-six years had had repeated attacks of right-sided abdominal pain for many years; appendicectomy six years earlier had failed to give relief. The appearances of slight dilatation of the renal pelvis were observed in the pyelogram; but the calyces were normal. Cystoscopy and cholecystography revealed no abnormality; there was no reaction to the Wassermann test, and tubercle bacilli could not be found in the urine. At operation Dr. Hughes-Jones excised the first and second lumbar ganglia and divided the greater, lesser and least splanchnic nerves. The post-operative course was uneventful except for one attack of pain in the right iliac fossa.

The other woman, aged twenty-one years, suffered for seven months with dull pain in the left loin, day and night, with exacerbations of severe colic. Dilatation of the renal pelvis with short well-capped calyces was the finding in the left pyelogram, and by pyeloscopy it was seen that the pain corresponded with contraction of the pelvis and was not related to the contractions of the calyces. At operation the first and second lumbar ganglia and the nerve trunks above and below were excised and the lesser and least splanchnic nerves were divided. There was a swinging temperature for ten days after operation; it then subsided to normal. There was no recurrence of the pain in the left loin.

Œsophageal Obstruction.

DR. EDGAR KING showed a woman, aged sixty-five years, who had suffered from malignant œsophageal obstruction for eight months. He performed gastrostomy and instituted high caloric feeding, and one week later performed œsophagectomy by Torek's method. The patient recovered after a relatively smooth convalescence.

Osteomyelitis.

Dr. King's other patient was a boy, aged fourteen years, who had been admitted to hospital suffering from acute osteomyelitis of the right fibula. The patient was subjected to diaphysectomy, and in the intervening six weeks had become well; reconstitution of bone had already been demonstrated radiographically.

Sarcoma of Bone.

DR. A. E. COATES showed two patients to illustrate the surgical treatment of sarcoma of bone. In the first example sarcoma had occurred in the upper extremity of the right humerus, and interscapulo-thoracic amputation had been performed after radiotherapy had been tried. Shock was prevented by injection of the brachial plexus with "Novocain" at the time the subclavian artery was ligated. In the other patient disarticulation of the hip had been done three months previously for sarcoma of the femur. The patient had gained 6·3 kilograms (one stone) in weight since operation. Colour preparations of the growths were shown.

Neurological Surgery.

Dr. Coates also showed three patients whom he had treated surgically for certain neurological conditions.

One patient had had the classical signs and symptoms of cervical rib and was shown to illustrate the advantage of dividing the *scalenus anterior* muscle instead of removing the rib. Dr. Coates said that the cessation of pain, recovery of sensation and improvement of the small muscles of the hand had been pronounced since the operation three months earlier. At operation the *scalenus anterior* had been observed as a tight band compressing the subclavian artery and the third trunk of the brachial plexus against the obliquely situated cervical rib.

The second patient had been submitted to operation at which a considerable area of the brain had been exposed by lifting an osteoplastic flap. The diagnosis was post-encephalitic arachnoiditis. An improvement in the patient's condition had been noted since operation.

The other patient had had a two-stage operation for calcified frontal lobe tumour. The frontal pole had been removed three weeks before the meeting. Headache, vomiting and fits had ceased. The mental condition appeared normal, and papillœdema had diminished since operation. Histological examination of the growth had not yet been completed.

Spontaneous Pneumothorax.

DR. IVAN MAXWELL showed a boy, aged fifteen years, who had been admitted to hospital on December 10, 1934, a few hours after the onset of an attack of pain in the chest with acute dyspnœa. He had been well until five months previously, when he got his first attack of dull constricting pain in the right side of the chest anteriorly, associated with acute dyspnœa, which lasted for two hours and then gradually disappeared. At the time of admission the apex beat of the heart was found in the fifth intercostal space, 11·8 centimetres (four and three-quarter inches) from the mid-line, but the heart sounds were clear and regular. There was great diminution of the range of movement of the right side of the chest, the percussion note was hyperresonant, and the breath sounds were inaudible. Radiographic examination confirmed the presence of complete right-sided pneumothorax. On the lateral periphery of the collapsed lung, in the position of the apical lobe, there was a circular shadow, with a clearer centre, about 1·25 centimetres (half an inch) in diameter, which projected from the lung tissue. Immediately above this was a larger area, with an incomplete peripheral outline, which appeared ragged. The appearance was that of two emphysematous bullæ, the upper one of which had ruptured. Increased dyspnœa and further displacement of the apex beat occurred. A week after admission a needle, connected with a manometer, was inserted into the right pleural space. A positive pressure of 5·5 centimetres of water was recorded. This pressure increased to 15 centimetres when the patient coughed. Pressure was made negative by the

use of a suction pump attached between the manometer and the pleural space; but within an hour or so the pressure became positive again. For the next few days it had to be adjusted frequently by the resident medical and nursing staff. For help in the management of the case at this stage Dr. Maxwell said that he was indebted to Dr. Ian Wood. Some surgical emphysema developed and for about a week the temperature rose to approximately 38·9° C. (102° F.), but again subsided to normal. From January 8, 1935, a slightly positive pressure was maintained constantly. At that date X ray examination revealed that there was a small amount of fluid on the right side and that the pneumothorax was almost complete. The needle was removed permanently on January 14, and, although recovery was slow, it was progressive and the boy was transferred to the out-patients' department on February 9. After the patient's return from a holiday in the country further X ray examination showed almost complete reexpansion of the lung and no evidence of any pathological processes. The patient was restored to health and had gained nine kilograms (twenty pounds) in weight.

Dr. Maxwell said that the points of interest in this case were: (i) the demonstration by X ray investigation of the emphysematous bulla through which the entrance of air had occurred into the pleural space, and (ii) the use of the manometer and the suction pump to combat the intrapleural pressure.

Pernicious Anæmia and Toxic Goitre.

Dr. Maxwell's second patient was a woman, aged thirty-seven years, who had been admitted to the hospital on January 4, 1935. In 1930 the patient noticed a swelling in the neck; this had become definitely larger during the twelve months prior to her admission to hospital. Tachycardia, tremor, loss of weight and pallor occurred. On physical examination the tumour was found to be a somewhat nodular, enlarged thyreoid gland. A systolic bruit was present over the apex of the heart; pallor was extreme. The basal metabolic rate was estimated at +60%. A test meal examination showed achlorhydria. With bovine and human strains of *Brucella abortus* there was agglutination to a titre of 1 in 160. Blood examination on January 7 revealed: erythrocytes 720,000 per cubic millimetre; hæmoglobin value, 16% (Sahli colour index, 1·14); leucocytes, 4,450 per cubic millimetre; anisocytosis, considerable macrocytosis and some microcytosis, poikilocytosis, occasional normoblasts; reticulocytes, 2%; platelets, rather scanty. The differential leucocyte count showed a neutropenia with relative lymphocytosis.

The patient was given an injection of 25 cubic centimetres of "Campolon" followed twenty-five days later by an injection of 20 cubic centimetres, and after another thirty-three days by an injection of 10 cubic centimetres. The progress is set out in tabular form below.

On March 7, 1935, thyreoidectomy was performed by Dr. Alan Newton, and the patient was discharged on March 31. From March 1 *Ferri et Ammonii Citras* was given three times a day in a dose of two grammes (30 grains); dilute hydrochloric acid was given in a dose of four cubic centimetres (one fluid drachm) with each meal. Dr. Maxwell said that this patient showed the unusual combination of pernicious anæmia and toxic goitre. The basal metabolic rate diminished from +60% to +17% as the anæmia improved, and without the administration of Lugol's solution. With the first injection of "Campolon" the hæmoglobin percentage had risen from 16 to 54 and the number of erythrocytes from 720,000 to 3,570,000 per cubic millimetre—a remarkable improvement. Massive doses of liver extract (parenterally) had now been shown by several observers to be most effective in the treatment of pernicious anæmia. Dr. Maxwell said that he was indebted to Dr. H. Gardiner for the blood examination, and to Dr. Ian Wood for supervision of the case.

Allergic Manifestations.

Dr. Maxwell also showed a group of patients illustrative of the management of allergic manifestations.

A female patient, aged forty years, first came under his observation on March 30, 1933, complaining of sneezing, rhinorrhœa, cough and wheezing, particularly between the hours of 5 a.m. and 6 a.m. Rhonchi could be heard at examination of the chest. The nose was regarded as normal, apart from œdema of the mucous membrane. Free hydrochloric acid in the test meal reached a maximum of 15 units. Intradermal tests showed a definite reaction to duck feathers and house dust. The patient was advised to sleep out of doors without feather pillows, which she had used previously. Ephedrine was administered and desensitizing injections of house dust extract were given over a period of two years. The patient was now well.

Another female patient, aged forty-five years, had had persistent asthma, sneezing, rhinorrhœa and itching of the nose, worst at spring time. Between attacks the chest was free from abnormal sounds. A test meal examination showed almost complete absence of free hydrochloric acid (five units). Cutaneous tests showed sensitization to rye grass, cocksfoot grass, duck feathers and house dust. This patient was advised to sleep in a bare room without feather bedding or eiderdown. Desensitizing injections of grass pollen were commenced. There was no evidence of sinusitis, and Dr. Maxwell regarded the prognosis as reasonably favourable.

The other patient was a woman, aged forty-two years, who complained of hay fever of several years' duration, occurring in the spring and early summer. Cutaneous tests showed definite sensitization to rye and cocksfoot grasses and to a slight degree to capeweed. Desensitizing injections were commenced on August 9, 1934, and were continued throughout the summer and autumn. The patient had injections at intervals of fourteen days, and the dose reached at the time of the meeting was 11,000 units of grass pollen (cocksfoot and rye).

Dr. Maxwell said that he believed that a maintenance dose of pollen extract through the summer and autumn prevented the fall in immunity that would otherwise occur if injections were discontinued. Pre-seasonal injections in the winter months were then carried on from the maintenance dose of the previous season, and a high degree of immunity could be established. Probably the ideal treatment was to attain eventually a maximum dose of 100,000 units as the first desensitizing injection.

"Campolon."	Date.	Hæmoglobin Percentage (Sahli).	Erythrocytes, per Cubic Millimetre.	Reticulocytes (Percentage).	Basal Metabolic Rate.
25 c.c.	January 7, 1935	16	720,000	2·0	+60%
	January 8, 1935	—	—	1·5	—
	January 9, 1935	—	—	4·0	—
	January 14, 1935	26	1,540,000	8·4	—
	January 16, 1935	—	—	4·2	—
	January 17, 1935	—	—	4·0	—
	January 18, 1935	—	—	3·4	—
	January 19, 1935	33	2,700,000	2·6	—
	January 22, 1935	38	2,600,000	1·0	—
	January 25, 1935	45	2,390,000	—	+19%
	January 29, 1935	54	3,570,000	—	—
20 c.c.	February 1, 1935	51	2,950,000	—	—
	February 6, 1935	55	3,070,000	—	—
	February 14, 1935	60	4,430,000	—	+17%
	February 27, 1935	60	4,550,000	—	—
10 c.c.	March 6, 1935	62	4,300,000	—	—

Chronic Benzol Poisoning.

DR. KEITH D. FAIRLEY showed a patient to illustrate the need for the addition of benzol to the list of industrial poisons under the *Workers' Compensation Act*. The patient had nearly lost his life from benzol poisoning but would not receive any compensation for his illness.

The man, aged twenty-three years, commenced working with benzol in June, 1933. He painted a "dope", said to contain 50% of benzol, on "leather splits" for motor cars, and he washed his hands twice a day in benzol. He worked in a large room with several windows; but there was not any forced ventilation. Another man employed in the same factory had become very pale and, on medical advice, had given up this work and had recovered.

In September, 1934, pallor became noticeable and increased steadily until, on February 18, 1935, the patient took to his bed with symptoms of grave anæmia, palpitation, extreme weakness, dyspnœa and headache. These symptoms were progressive for two months. In addition, at intervals for a year, slight attacks of epistaxis had occurred. He was admitted to hospital on March 15, 1935, when the clinical findings were: extreme pallor of the skin and the mucous membranes, and a systolic bruit audible over the whole precordium. The hæmoglobin value was 19% (Sahli, corrected by adding 25% to the actual reading); the erythrocytes numbered 1,050,000 (colour index 0·9), leucocytes 1,000, and platelets 48,000 per cubic millimetre. There was moderate anisocytosis of the red cells, which were orthochromic; there was no poikilocytosis. Reticulocytes were in the proportion of 2% of the red cells. One macro-normoblast was seen in the examination of two films. The differential leucocyte count revealed: neutrophile cells, 8%; old metamyelocytes, 22%; eosinophile cells, 4%; large mononuclear cells, 6%; lymphocytes, 60%. The coagulation time and retraction of the clot were within normal limits. The bleeding time was increased to 9·5 minutes. There was shown a positive delayed reaction to the Van den Bergh test; quantitative estimation revealed a concentration of 3·5 units of bilirubin.

The patient received six grammes (90 grains) of *Ferri et Ammonii Citras* a day by mouth. Transfusions of 480 cubic centimetres (sixteen ounces) of citrated blood were given on March 18, March 26, April 1, April 9, and on April 27; one of 240 cubic centimetres (eight ounces) was given on April 17. Between March 16 and May 14 he received 73 cubic centimetres of "Campolon" intramuscularly, in ten doses, varying from four to ten cubic centimetres.

The general condition and the condition of the patient's blood gradually improved, and on May 17, 1935, the hæmoglobin value was estimated at 62%; the red blood cells numbered 3,250,000, and the leucocytes 4,800 per cubic millimetre. The differential count was as follows: neutrophile cells, 32%; old metamyelocytes, 17%; eosinophile cells, 3%; monocytes, 7%; and lymphocytes, 41%. Anisocytosis was still obvious; there was a moderate degree of polychromasia, and the reticulocytes were still in the proportion of 2%.

Dr. Fairley considered that the transfusions had been of chief importance in the treatment, tiding the patient over the critical period until his surviving bone marrow had been able to regenerate his blood cells. The "Campolon" and iron were given to insure an adequate supply of necessary factors for blood regeneration. The outcome of the benzol poisoning was an aplastic anæmia threatening life.

Lead Poisoning.

Dr. Fairley's second patient was a boy, aged eighteen years, who had had two attacks of chorea in childhood and had presented typical signs of rheumatic mitral stenosis when first seen on November 17, 1933. His cardiac reserve was excellent; he cycled six miles to work each morning, in about twenty minutes, without distress. He had been employed as an assembler for eighteen months at a factory where electrical batteries for motor cars were manufactured. Pallor had been present for six months. He reported for treatment of frequent colds and a persistent dry cough. He had no symptom of plumbism; but examination of the blood gave the following results: hæmoglobin value, 92%; red blood cells, 4,650,000 per cubic millimetre (colour index, 1·0); leucocytes, 8,600 per cubic millimetre. The blood film was of normal appearance, except for the fact that basophilic stippling was present in 0·5% (5,000 per million) of the red cells, and an equal number were affected with diffuse polychromasia.

The lad disregarded warnings of the danger of lead poisoning at his work and was readmitted to hospital on May 6, 1935, with typical lead colic. He had had repeated attacks of less severe colic in the preceding few months. There was no blue line on his gums nor any evidence of wrist-drop or other paralysis. The heart condition appeared to be stationary. The application of renal function tests gave normal results. The fundi were of normal appearance. At this stage the results of blood examination were: hæmoglobin value, 59%; red blood cells, 3,350,000 per cubic millimetre; leucocytes, 7,000 per cubic millimetre. Polychromasia was definite; there was punctate basophilia of 2% of the red cells (20,000 per million); 9·6% were reticulocytes. There was obvious anisocytosis and there was some hypochromia of the red cells. Rapid relief of the colic followed the intravenous injection of five cubic centimetres of a 5% solution of calcium chloride.

Dr. Fairley pointed out that in Melbourne the vast majority of the patients seen with industrial lead poisoning were employed in the manufacture of electric batteries.

The Timing of Cardiac Bruits.

Dr. Fairley also showed a patient with syphilitic aortitis, aortic regurgitation and coronary thrombosis, to illustrate the difficulty that was sometimes encountered in the accurate timing of aortic diastolic murmurs when the heart was acting rapidly. The patient was a man, aged forty-three years, who had been employed in heavy manual labour until three months before he was seen first at the hospital on April 29, 1935. While in bed about three months earlier he had been seized suddenly with very severe pain in the epigastrium; this lasted for an hour. He remained in bed for the next three weeks. From that time slight exertion produced considerable dyspnœa, and, if he persisted with the exertion, pain of anginal type would supervene.

Examination showed a characteristic Corrigan pulse, a large heart, to-and-fro murmurs at the base of the heart and down the left border of the sternum, and a diastolic bruit at the apex. A diastolic thrill was present at the apex and at the left border of the sternum at the level of the third rib. The murmur at this site was very harsh. The heart was rapid. The result of the Wassermann test confirmed the diagnosis of syphilitic aortitis.

Polycythæmia, Hyperplesis and Chronic Duodenal Ulcer.

Dr. Fairley's fourth patient was a man, aged forty-eight years, who had reported first in June, 1932, with a typical history of chronic duodenal ulcer. Clinical diagnosis was confirmed by X ray examination. The patient also complained of severe right-sided headache of some weeks' duration. The urine contained a trace of albumin. The systolic blood pressure was 170 and the diastolic 100 millimetres of mercury. The pupils reacted to light and accommodation; but the left pupil was larger than the right. No abnormality was found in the fundi or in the cerebro-spinal fluid. On September 4, 1932, two days after the lumbar puncture, he was admitted in a drowsy condition. No history could be obtained. A generalized convulsion occurred on the day of admission and three others followed next morning. He then became violent and quite unmanageable. Renal function tests gave normal results. He was discharged on October 12, 1932, without a definite diagnosis. The patient was seen again a year later, when he still complained of headache and dyspepsia. The systolic blood pressure had increased to 210 and the diastolic to 130 millimetres of mercury. The spleen was palpable about two fingers' breadth below the costal margin. The fundi presented the appearance of definitely thickened arteries nipping the veins. A few small spots of hard

exudate and some small hæmorrhages were noted. Blood examination revealed the following: hæmoglobin value, 118% (corrected Sahli); red blood cells, 7,900,000 per cubic millimetre; leucocytes, 8,250 per cubic millimetre. There was slight prolongation of the coagulation and the bleeding times.

Phenylhydrazine hydrochloride was given in doses ranging from 0·06 to 0·12 gramme (one to two grains) a day, from November 15 to November 27, and the red cell count fell progressively until, on December 4, 1932, it was 4,770,000 per cubic millimetre, and the hæmoglobin value was 89%. Four days later, on his discharge from hospital, he was ordered to take 0·06 gramme (one grain) per week of the drug as a maintenance dose.

On January 11, 1933, the red cell count was 8,840,000 per cubic millimetre, the hæmoglobin value had risen to 123%, and the leucocytes numbered 9,800 per cubic millimetre. Until August, 1934, when he stopped taking the drug, phenylhydrazine was continued in doses of 0·18 gramme (three grains) a week. The blood count remained at about the normal level.

In January, 1935, the patient next appeared after a profuse hæmorrhage of bright red blood from the bowel. Though hæmorrhoids were present, no local cause could be found to account for the bleeding. The red cell count was 4,850,000 per cubic millimetre, and the hæmoglobin value was 65%. Thereafter the hæmoglobin value fluctuated between 70% and 80%, and the red cell count from 5,700,000 to 6,000,000 per cubic millimetre. The blood pressure readings were: systolic 170, diastolic 110 millimetres of mercury.

At the beginning of April attacks of hæmaturia with right-sided renal pain and the passage of clots occurred. Renal function tests still failed to reveal any abnormality; but a large ptosed right kidney shadow was seen on X ray examination. Retention of urine, due to clots, was troublesome later.

Dr. Fairley said that the splenomegaly was evidence against the diagnosis of *polycythæmia hypertonica* of Gaisbock. Treatment for the polycythæmia had resulted in relief of the persistent headache. It was felt that the chronic duodenal ulcer and the hyperpiesis were not primarily related to the polycythæmia.

DR. J. F. CHAMBERS agreed that the diagnosis of *polycythæmia vera* best explained the majority of the manifestations, and stated that he had seen one patient with this condition who had had a cerebral seizure very similar to the one from which this patient had suffered.

Skin Diseases.

DR. R. R. WETTENHALL showed a series of cases of dermatological interest.

One patient suffered from *mycosis fungoides* in the tumour stage, which, Dr. Wettenhall said, was interesting from the point of view of the differential diagnosis from *lymphadenosis cutis*. There was a history of severe pruritus for three years or more, followed by an exfoliative dermatitis and, later, widespread tumour formation with some fungation, the regions of the axillæ and the groins being especially involved, with hypertrophy. There was also a history of profuse perspiration at times. Blood examination did not reveal any abnormal cells; but there was an eosinophilia amounting to 11% and a lymphocytosis of 28,000 cells per cubic millimetre, with no intermediate types. The results of histological examination were consistent with the diagnosis of *mycosis fungoides*. A single treatment with X rays had relieved the patient greatly.

Two patients were shown with widely spread tertiary gummatous areas of the buttocks. Dr. Wettenhall remarked that these lesions were now becoming uncommon.

Dr. Wettenhall's next patient, an adult male, had an infection of the scalp, in the occipital region, which was probably an example of mouse favus. Mouse favus was reported in 1917 by Dr. Lawrence and had been seen frequently since. There was scarring with follicular pustulation of a pseudo-kerion appearance; but the first examination did not show *Achorion quinckeanum*.

Another patient had *acne indurata* severely, and was shown by Dr. Wettenhall to demonstrate the value of X ray treatment. Dr. Wettenhall said that in this variety of acne a course of X ray treatment seemed to be necessary for a satisfactory result.

ANNUAL MEETING, MELBOURNE, 1935.

IN last week's issue of this journal the list of office-bearers of the several sections in connexion with the annual meeting of the British Medical Association, Melbourne, 1935, and the programmes of the sections were published, together with the provisional time-table. The attention of readers is directed to the following.

MISCELLANEOUS INFORMATION.

Clinical Addresses and Demonstrations.

Clinical addresses and demonstrations are being arranged in addition to the meetings of sections. Professor Edwin Bramwell has consented to give a clinical address on a neurological subject, and Professor E. W. Hey Groves will give an orthopædic address entitled "The Valley of Dry Bones". It is hoped that other addresses by prominent visitors will be arranged.

Clincial demonstrations are to be held at several of the public hospitals, including the Orthopædic Hospital at Frankston, the programme for which is being formulated by a subcommittee, of which Dr. W. W. S. Johnston is the convener. Fuller details of these will be published at a later date.

The Embley Memorial Lecture will be delivered by Dr. Z. Mennell, of London.

Academic Dress.

Academic dress will be worn at the official religious service to be held at Saint Paul's Cathedral at 4.30 p.m. on Tuesday, September 10; on the occasion of the adjourned annual general meeting and President's address on Tuesday morning at the Town Hall, Melbourne; at the President's reception on Tuesday evening; and at a garden party at the University later in the week.

The Annual Dinner.

The annual dinner will be held in the mural hall and grill room at the establishment of Messrs. Myer's, Limited, on Thursday evening, September 12. The price of the tickets will be £1 1s. (inclusive of wines). As the seating accommodation is limited, those desirous of attending are requested to make early application to the Honorary Secretary, Dinners Subcommittee, British Medical Association office, 12, Collins Street, Melbourne, C.1.

Travelling Facilities.

The Commissioners of Railways in the different States have granted the following concessions for members attending the meeting: Return fares from other States to Melbourne at single fare rate *plus* one-third; holiday excursion fares for members travelling from Victorian country stations to Melbourne. These tickets are available for one month. Any member may obtain similar concessions for wife or husband and for children (sons under the age of sixteen years or daughters of any age who are living with and dependent upon their parents for support), provided they accompany the member and separate certificates are furnished. These concessions will be available only to members who present the prescribed certificate signed by the secretary of the Branch in the State from which members travel.

The Union Steam Ship Company of New Zealand and Messrs. Huddart, Parker, Limited, have consented to allow a concession of 10% off first-class fares to members and their wives travelling from New Zealand to Melbourne and return. Tasmanian Steamers, Proprietary, Limited, offer the same concessions to those travelling from Launceston, Burnie or Devonport. The Adelaide Steamship Company, Limited, Australian Steamships, Proprietary, Limited, the

Australasian United Steam Navigation Company, Limited, Messrs. Huddart, Parker, Limited, Messrs. McIlwraith, McEacharn, Limited, and the Melbourne Steamship Company, Limited, offer similar concessions to those members who come from Western Australia, South Australia, Queensland and New South Wales. To obtain these shipping concessions it will be necessary for members to obtain certificates from the secretary of the local Branch certifying that they are *bona fide* members attending the meeting.

General Information for Ladies.

The Ladies' Club will be at the Oriental Hotel, Collins Street. A cordial invitation will be extended to all lady members of the Association and to ladies accompanying members attending the meeting to make use of the club. All ladies will be requested to register their names at the club on arrival, where badges and a copy of the Handbook for Ladies will be issued to them. The club will be open from 9 a.m. to 6 p.m., and will contain a lounge, writing and card rooms. A hairdressing saloon will be available. Morning tea, lunch and afternoon tea will be served as required. Letters, telegrams, messages *et cetera* may be directed to the club. There will also be a general information bureau. All information regarding the ladies' programme will be obtained at the club, as well as information of excursions, golf, tennis *et cetera*.

A junior ladies' committee is arranging a programme of similar entertainments for the younger visitors.

Excursions and Tours.

For interstate visitors attending the meeting special motor excursions are being arranged from Brisbane and Sydney via Prince's Highway, including Canberra, if desired, both to and from Melbourne. Also from Sydney a special railway tour will be available on Thursday, September 5, and Friday, September 6, via Canberra, Hume Weir, Kiewa Valley, Tawonga Gap and Mount Buffalo, ending at Melbourne at noon, Sunday or Monday, according to the day of departure.

From Adelaide similar tours will commence on Wednesday, September 4, and Thursday, September 5, including two days at the Grampians, and ending at Melbourne at 9.30 p.m. on Saturday or Sunday, according to the day of departure.

All these tours will be available after the meeting in the reverse way for visitors returning home. Full details will be supplied by the Excursions Officer.

After the meeting seven extended tours by motor have been arranged to various parts of Victoria, of two to four days' duration. A railway week-end tour to Mount Buffalo leaves on Friday, September 13, at 4 p.m. A camping and fishing week-end may be taken at the Metropolitan Board of Works quarters at Wallaby Creek, at the Plenty Ranges watershed.

At midnight on Sunday, September 15, a railway "Reso" tour of Victoria commences. This will embrace the western district, taking in station homesteads at Camperdown and the "Trufood" factory at Terang. At Warrnambool a kangaroo drive will take place. Albury and Hume Weir will be next visited, then the wineries at Rutherglen. A day at the Chalet, Mount Buffalo, will follow, then Bright, with its plantations. Melbourne will be reached on Friday evening.

Daily tours, occupying the whole or half the day, have been arranged. The charges will be published at a later date.

Half-Day Excursions.

The following afternoon tours will commence at 2 p.m. daily, with the exception of the tour to Warrandyte, which commences at 2.15 p.m., and Frankston, which commences at 1.30 p.m.

1A. *City and Southern Suburbs* (30 miles).—City streets, principal buildings, museum, galleries, university, St. Kilda Road, Esplanade, Caulfield racecourse, Malvern, Toorak, Goldman's Australian Woods, Exhibition, Alexandra Avenue.

1B. *City, Eastern Suburbs and Factories* (25 miles).—City streets and buildings, museum, galleries, university, Pelaco shirt factory (largest in southern hemisphere), Bryant and May's match factory, Toorak, Kooyong, Hawthorn, Heidelberg, Clifton Hill.

2. *Warrandyte* (40 miles).—A scenic river view tour towards the source of the River Yarra. The route is via Balwyn and Doncaster, returning via Templestowe.

3A. *Panton Hills* (60 miles).—The route is via Heidelberg, Eltham, Kangaroo Grounds, Panton Hills, Hurstbridge, Diamond Creek.

3B. *Kinglake* (80 miles).—The route is via Yan Yean Whittlesea, Plenty Ranges, Kinglake, Kangaroo Grounds, Heidelberg. Wattle, fruit and orchards are the chief attractions.

4. *Blue Dandenong Ranges* (70 miles).—The route is via Box Hill, Croydon, Mount Dandenong, Olinda, Sassafras, Sherbrooke Forest (taking in the grounds of Mr. A. M. Nicholas's property), Belgrave, Ferntree Gully, Burwood.

5. *Werribee.*—A visit to the Metropolitan and Research Farms and Carters' Egg Farm (largest in the southern hemisphere).

6A. *Mornington* (75 miles).—A very fine coastal route, skirting Port Phillip Bay; return inland along Point Nepean Road.

6B. *Frankston* (55 miles).—The tour commences at 1.30 p.m. A visit to the Peninsula Golf Club. Time allowed for play, 2½ hours. Car returns to Melbourne at 5 p.m.

7. *Healesville and Badger Creek* (90 miles).—Tour arranged for visitors to see koalas and platypus at the sanctuary.

Whole-Day Tours.

The following whole-day tours will commence at 10 a.m. daily.

8A. *Flinders and Arthur's Seat* (120 miles).—A beautiful drive embracing the main attractions of the Mornington Peninsula. Main points of interest are Frankston, Hastings, Western Port Bay, Somers, Flinders, Redhill, Arthur's Seat, from where wonderful panoramic views are obtained, Droma, Mount Martha, Mornington.

8B. *Cowes* (130 miles).—The route is via Dandenong, Cranbourne, Tooradin, San Remo, Phillip Island, Stony Point, Hastings, Frankston, Point Nepean Road.

9A. *Mount Macedon and Cross* (90 miles).—Mount Macedon is the site of the finest country residences of wealthy city people. The memorial cross at the summit of Mount Macedon is inspiring. This tour does not take in Hanging Rock.

9B. *Mount Blackwood and Trentham Falls* (135 miles).—The route is via Bacchus Marsh and Myrnong, then across the ranges to Mount Blackwood, heavily timbered. Mineral springs and gold are attractions. Trentham Falls are delightfully situated. Return is via Woodend and Gisborne.

10A. *Marysville and Black Spur* (130 miles).—The route is via Healesville, across the Black Spur range to Marysville. Tall timber can be seen in abundance. Madame Melba's cottage and Maroondah Dam are the principal attractions. Fern gullies and panoramic views are also features of this tour.

10B. *Acheron Way via Warburton* (145 miles).—Delightful combination round tour embracing Lilydale, Yarra Valley, Warburton, Cement Creek, Acheron Way. High mountain ranges, Somer's Park and Narbethong are features. The return is via Black Spur and Healesville.

11. *Ballarat* (140 miles).—Interesting country scenery on main highway. Sight-seeing tour of Ballarat (old gold-mining centre), including Eureka Stockade, statuary, gardens.

12. *Seymour* (125 miles).—Inspect Northwood Park horse and cattle stud (red polls) at the special invitation of Mr. A. G. Hunter.

13. *Gembrook* (100 miles).—A delightful round tour via Berwick, Olinda, Belgrave, Emerald, Gembrook, Gilwell Park, Upper Beaconsfield. Afternoon tea will be arranged at Dr. Sewell's residence at Berwick by special invitation.

NOMINATIONS AND ELECTIONS.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Corlette, Noel Adair Christian, M.B., B.S., 1931 (Univ. Sydney), 33, Wolseley Road, Point Piper.

Medical Practice.

TRANSMISSION OF URINE AND VACCINE BY POST.

THE following information regarding the transmission of urine and vaccine by post has been received from the Postmaster-General's Department and is published for the information of readers.

Provided the following conditions are complied with, samples of urine may be forwarded by unregistered post to registered medical practitioners or to public hospitals and clinics, as well as to the registered laboratories mentioned in Rule 151:

Samples of urine must be enclosed in thick glass containers so closed that none of the contents can escape through the opening. The container must be surrounded with absorbent material, such as wadding or cotton wool, in sufficient quantity to protect it from breakage and to absorb all the liquid in the event of the container being broken. It is desirable also that the packing should be surrounded by strong corrugated paper. The container, with the prescribed protective packing, must be enclosed either in a strong wooden box or metal canister, which should be wrapped in strong paper securely fastened.

The covering of the package must bear the name and address of the sender and an endorsement that the package contains liquid. Owing to the danger of breakage, the package should not be dropped into a letter box, but should be handed in over the counter of a post office for dispatch.

In addition, further conditions have been issued relating to the transmission of vaccine by post. They are as follow:

Vaccine: (1) Live virus vaccine must be enclosed in a thick glass container hermetically sealed. The container must be surrounded with an absorbent substance in sufficient quantity to protect it from breakage and to absorb all the liquid in the event of it being broken. The container and its protective covering must be securely packed in another container of metal, wood, strong corrugated paper or other suitable material. The outside cover must bear the name and address of the sender and an endorsement indicating the nature of the contents of the package.

(2) The distribution and use of live virus cultures are subject to the provisions of the State laws, and the responsibility for observance of those laws lies with the persons concerned in such distribution and use.

Correspondence.

THE MENTAL HOSPITALS OF NEW SOUTH WALES.

SIR: May I draw your attention to a statement which appears in your leading article of April 27, 1935. You quote from the report of the Inspector-General of Mental Hospitals, New South Wales, as follows: "Out of 23 nurses, so far ascertained by the Director of Tuberculosis, who have been infected in hospitals throughout the State generally, no less than 8 have come from mental hospitals."

If that statement implies that the sufferers received their infection in hospitals as a result of nursing tuberculous patients, it is not correct.

The investigation made by the Tuberculosis Division covered a period of ten years (1923-32) in forty institutions. During that period 23 nurses have been diagnosed as suffering from tuberculosis.

The staff of the mental hospitals reviewed numbered over 800. In the ten-year period eight out of these had developed tuberculosis; that is, less than 1%.

It has not been shown that these nurses "have been infected in hospitals" as stated. The source of infection not having been determined, and none of the nurses having been radiologically examined before commencing their training, there is no evidence to show that they were non-tubercular before undertaking this occupation.

Certain facts regarding these eight cases may be of interest. Seven were males, one female. The female was reported by the matron to be suffering from a tuberculous hip. The ages of the males were respectively 54, 43, 39, 35, 31, 30 and 24 when notified. At least four of them were returned soldiers, three of whom were under the control of the Repatriation Department, which hitherto has recognized tuberculosis as pensionable only when due to war service.

For purposes of comparison it may be noted that in the period under review only two cases of tuberculosis occurred among nurses at the Waterfall Sanatorium.

It appears, therefore, that the risk of nurses in this State contracting tuberculosis in the course of their employment is not great; certainly not as great as the figures quoted in your leading article suggest.

Yours, etc.,

E. SYDNEY MORRIS,
Director-General of Public Health.

Sydney,
May 13, 1935.

Honours.

JUBILEE AND BIRTHDAY HONOURS.

HIS MAJESTY THE KING has been pleased to confer the following honours on medical practitioners:

Dr. William Mollison, of London, has been created a baronet.

Professor Patrick Playfair Laidlaw, of London, has been created a knight.

Sir George Newman, of London, has been created a Knight Grand Cross of the Most Excellent Order of the British Empire.

Dr. Jean Connor, of Melbourne, has been created a Dame of the Most Excellent Order of the British Empire.

Dr. Constance D'Arcy, of Sydney, has been created a Dame of the Most Excellent Order of the British Empire.

Sir Frederick Gowland Hopkins, of Cambridge, has received the Order of Merit.

Dr. Helen Mayo, of Adelaide, has been created a Companion of the Most Distinguished Order of Saint Michael and Saint George.

Dr. Cecil Evelyn Cook, of the Northern Territory, has been created a Commander of the Most Excellent Order of the British Empire.

Dr. Arthur Edmund Colvin, of Sydney, has been created a Commander of the Most Excellent Order of the British Empire.

Proceedings of the Australian Medical Boards.

TASMANIA.

THE undermentioned have been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as duly qualified medical practitioners:

Williams, Constance Isabel Arundel, M.B., B.S., 1932 (Univ. Melbourne), Public Hospital, Launceston.

Holdsworth, William Goldthorpe, M.B., B.S., 1933 (Univ. Melbourne), Mental Diseases Hospital, New Norfolk.

THE GEORGE MACDONALD TESTIMONIAL FUND.

THE undermentioned subscriptions have been received for the George Macdonald Testimonial Fund:

£5 5s.: Dr. E. H. Molesworth.

£3 12s. 6d.: Staff of the New Medical School, University of Sydney.

£3 3s.: Dr. G. A. Buchanan.

£2 2s.: Dr. A. J. Canny, Dr. James Sinclair, Dr. R. S. Godsall, Messrs. W. Watson and Sons, Limited, Mr. C. H. Barter.

£1 2s.: Dr. H. Matheson.

£1 1s.: Dr. and Mrs. Wilfred Evans, Dr. Marshall Andrew, Dr. Laurence Hughes, Dr. John Blakemore, Dr. Clive Blackwell, Dr. R. S. Wallace, Messrs. E. C. Heyne and Company, Dr. J. Colvin Storey.

£1: Professor E. R. Holme, Dr. Stuart D. Allen, Mr. H. Chew, Dr. A. S. Johnson, Pathology Department, Sydney Hospital.

17s. 6d.: School of Public Health and Tropical Medicine.

11s.: Dr. F. G. Steele.

10s. 6d.: Dr. P. T. Millard, Dr. R. E. Murray, Dr. F. W. Clements, Professor Harvey Sutton, Dr. Marjorie Dalgarno, Dr. Charlotte Gammie, Dr. H. A. McCredie, Dr. W. S. Dawson, Dr. G. W. Sinclair, Mr. J. Engisch, Messrs. Stewart and Son.

10s.: Dr. H. R. Carne, Mr. J. Findlayson.

Books Received.

MIND, BODY AND HEALTH: AN INTRODUCTION TO PSYCHOLOGY, by E. Fretson Skinner, M.A., M.B., F.R.C.P.; 1935. London: H. K. Lewis and Company, Limited. Crown 8vo., pp. 42. Price: 2s. net.

THE CONQUEST OF SUFFERING, by Ritchie Calder, with an Introduction by Professor J. B. S. Haldane, F.R.S.; 1934. London: Methuen and Company, Limited. Crown 8vo., pp. 166. Price: 5s. net.

Diary for the Month.

JUNE 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JUNE 11.—Tasmanian Branch, B.M.A.: Branch.
JUNE 14.—Queensland Branch, B.M.A.: Council.
JUNE 15.—Victorian Branch, B.M.A.: Branch.
JUNE 18.—Tasmanian Branch, B.M.A.: Council.
JUNE 18.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 19.—Victorian Branch, B.M.A.: Clinical Meeting.
JUNE 19.—Western Australian Branch, B.M.A.: Branch.
JUNE 20.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 25.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JUNE 27.—South Australian Branch, B.M.A.: Branch.
JUNE 27.—New South Wales Branch, B.M.A.: Branch.
JUNE 28.—Queensland Branch, B.M.A.: Council.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xv, xvi, xvii.

CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officer.

KOORDA ROAD BOARD, KOORDA, WESTERN AUSTRALIA: Medical Officer.

LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officers.

PUBLIC SERVICE BOARD, SYDNEY, NEW SOUTH WALES: Junior Resident Medical Officers.

ROYAL ALEXANDRA HOSPITAL FOR CHILDREN, SYDNEY, NEW SOUTH WALES: Resident Medical Officers.

SYDNEY HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Officers.

THE MATER MISERICORDIÆ HOSPITAL, NORTH SYDNEY, NEW SOUTH WALES: Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY HOSPITAL, are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.